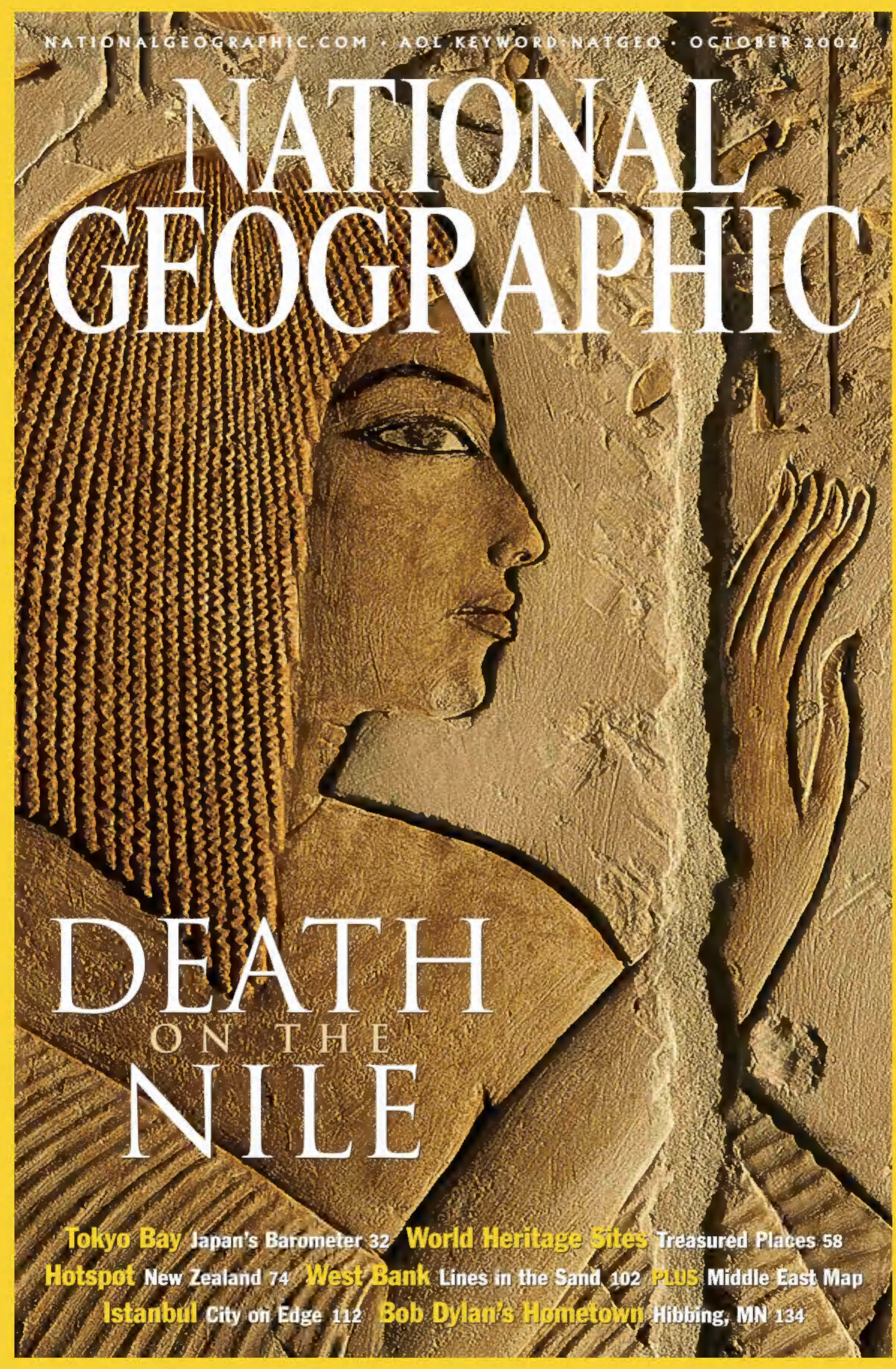
NATIONALGEOGRAPHIC.COM • AOL KEYWORD: NATGEO • OCTOBER 2002

# NATIONAL GEOGRAPHIC



# DEATH ON THE NILE

ISRAEL
SYRIA
JORDAN
TURKEY
LEBANON
IRAN
WEST BANK AND GAZA STRIP
EGYPT
IRAQ
SAUDI ARABIA
OMAN
KUWAIT

# Heart of the MIDDLE EAST

Produced by National Geographic Maps for National Geographic Magazine

NATIONAL GEOGRAPHIC

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ALLEN CARROLL, CHIEF CARTOGRAPHER

Washington, D.C., October 2002


## BEIRUT

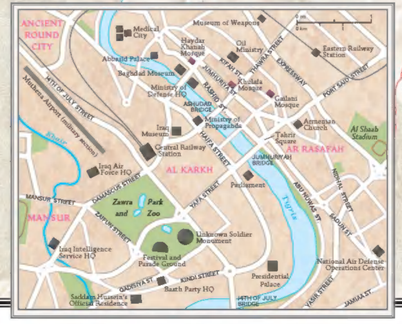
Massively ravaged during the 1975-1990 civil war, which split Beirut along the infamous Green Line dividing its Muslim west from its Christian east, Lebanon's capital has massively rebuilt. A five-year, five-billion-dollar renovation has transformed the ruined Paris of the Middle East into a fair reflection of what it was before the war: a capital of fashion, banking, trade, international conferences, nightlife, and tourism served by three dozen airlines.


## JERUSALEM

Medieval cartographers located Jerusalem at the center of the world, and in the eyes of many the Old City remains so. For Jews the Western Wall of the Second Temple is the holiest of sites. Above it is the Dome of the Rock, third holiest site in Islam, a mosque commemorating the place where Muhammad ascended to heaven. A few blocks away the Church of the Holy Sepulchre marks the traditional site where Jesus was crucified, buried, and resurrected. Israel claims the city as its eternal capital; Palestinians assert that in the future it will be theirs.


## DAMASCUS

In the world's oldest continuously inhabited city, the desert climate of Damascus is softened and made green by the Barada River and Ghouta Oasis. Conquering armies, kingdoms, dynasties, and empires have swept through for thousands of years, but Damascus has been spared from extensive damage in modern conflicts. The city remains famous for its ancient markets, museums, remnant Roman walls, and the eighth-century Umayyad Mosque, considered to be one of the world's finest examples of Islamic architecture.




## BAGHDAD

Young as Middle Eastern cities go, Baghdad was founded in 762 by Mansur, caliph of the Abbasid dynasty. It soon rose to become one of the most important cities of Islam—and a center of Arabic scholarship and arts—notably under caliph Harun ar-Rashid, celebrated in tales of the Arabian Nights. During the Persian Gulf war of 1991 the city was heavily bombed. Damaged bridges, power grids, water systems, and buildings have been repaired or rebuilt. Saddam's regime has thrown up plenty of grandiose monuments, but life is bleak for ordinary citizens.

Design: Sally S. Summerall. Research: Debbie J. Gibbons, Nathaniel Vaughn Kelso. Edit: Maureen J. Flynn, Michael J. Horner, Ilsa Parta. Rev: Mary Kate B. Cannaliato. Production: Glenn C. Caillouet, Relish John A. Bonner

## Map Legend

- Limited-access highway
- Major road
- Other road
- Canal
- Channel
- Oil pipeline
- Passenger railroad
- Airport
- Oil field
- Pass
- Ruin
- Site
- Waterhole
- Rock or shoal
- Below sea level
- Coral reef
- Dry salt lake
- Intermittent lake
- Lava
- Salt desert
- Sand
- Swamp

Conic Projection. Standard Parallels 26° and 38°30'
SCALE 1:3,281,000 or 1 INCH = 36 MILES

STATUTE MILES 0 25 50 75 100

## Geographic Equivalents

| | | | |
|---|---|---|---|
| Ab | river, water | Har | mountain |
| Arîje | area | Holet | dunes |
| Bahr | lake | Hawr | lake, marsh |
| Band | lake, mountain range | Jabal | mountain, range |
| Barajı | dam, reservoir | Jazîrat, Jezîrat | island |
| Buhayrat | lake, reservoir | Kol, Kul | lake |
| Burnu | cape, point | Kurfezî | bay, gulf |
| Dağı | mountain | Qa' | depression, marsh, mud flat |
| Dağları | mountains | Qaşr | hill |
| Dasht | desert, plain | Qum | desert, sand |
| Daryâcheh | lake, marshy lake | Ra's | cape |
| Gardaneh | pass | Sabkhat | salt lake |
| Gowd | depression | Shâkh | mountain |
| Hamun | depression, lake | Wâdî | valley, watercourse |

International boundaries and disputed areas reflect de facto status at time of publication.



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TODAY

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he'd Tell you How
He ALMOST died from
an oil Spill
AND How DAWN WAS THERE to HELP CLEAN Him UP.
If THIS bird could talk, he'd tell you How wildlife experts
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because it cuts GREASE while being gentle on SKIN.
If this bird could talk,
He'd Tell You How Happy he is to be Alive today.



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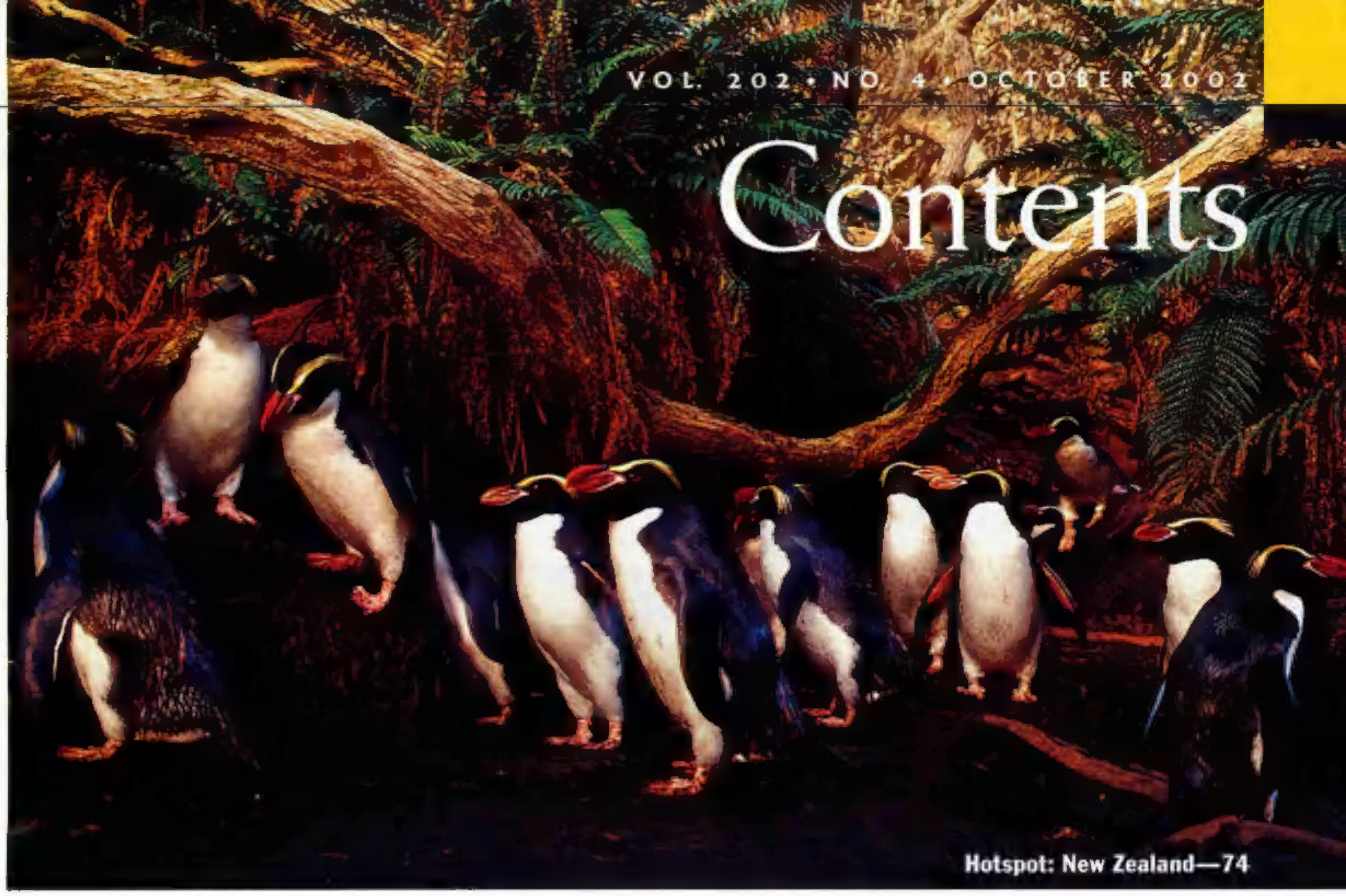
VOL. 202 • NO. 4 • OCTOBER 2002

# Contents



Hotspot: New Zealand—74

## FEATURES



## DEPARTMENTS



### THE COVER

A portrait for the afterlife: Maya, director of the treasury under King Tutankhamun, prays to the gods on the wall of his tomb at Saqqara.
BY KENNETH GARRETT

Cover printed on recycled-content paper

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# From the Editor

ANNIE GRIFFITHS BELT

It's a big list: 730 items long, to be exact. That's how many of the world's buildings, ruins, wild places, even fossil beds have earned the World Heritage designation—and the promise of protection—from the United Nations Educational, Scientific and Cultural Organization (UNESCO).

At first a list this long might seem like a cold, impersonal thing. But not this list. I took it home from the office, and I read it slowly one night, from start to finish. Sure, many of the names were unfamiliar to me. But not all of them.

There's Jordan's ancient stone city of Petra, where I once climbed a mountain called Jebel Haroun with guide Hamoudi al-Bedoul (above) to visit the traditional tomb of Aaron, brother of Moses, and find a falcon's view over Jordan and into Israel.

There's Hawaii Volcanoes National Park, where I witnessed the birth of new land during an eruption of Kilauea volcano.

And just a two-and-a-half-hour drive from my living room there's Thomas Jefferson's home, Monticello, and his living monument, the University of Virginia.

Among the sites, I found places of inspiration, monuments to human achievement, and symbols of international cooperation: natural and man-made treasures that have what UNESCO's World Heritage Centre in Paris calls "outstanding universal value."

Try reading the list yourself. It starts on page 58. As you read, count the ones you've visited. Dream of the ones you'd like to visit. Then imagine a world where these places weren't protected and preserved forever.

Bill Allen


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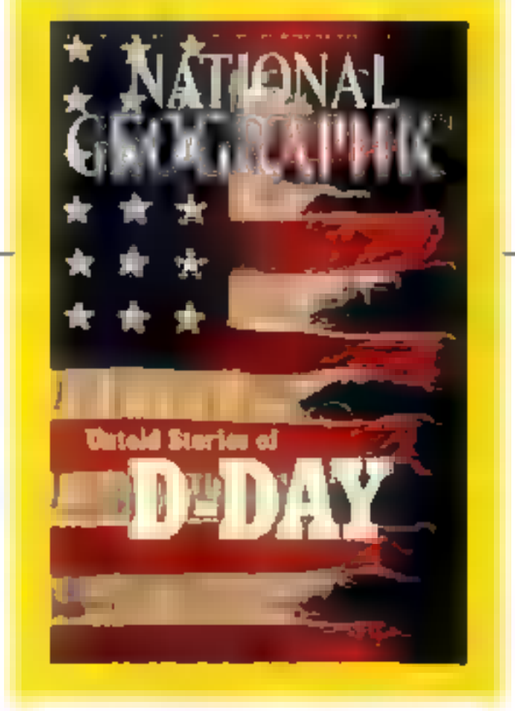
Sample for press only

# Forum




**June 2002**

*Dozens of veterans sent D-Day memories. Some of their stories were heartbreaking. Equally poignant was the letter from a veteran's son who had no idea his father had survived D-Day until after his father's death. "Please tell people to ask relatives about their war experiences," he wrote. "Once those souls depart this life, you'll never know their stories, and we'll all be poorer for it."*

## Untold Stories of D-Day

My father, Sgt. Henry L. Gilliam, was one of the hundreds of brave paratroopers who preceded the daytime landings in Normandy. My father's group of the 507th Parachute Infantry jumped in darkness six hours before the seaborne attack, landing two miles inland. He and his jump partner—a friend since basic training—landed among hedgerows. His buddy began to scream from the other side of a row. Crawling up to see, my father found his partner fouled in a tree and hanging over an enemy machine gun nest. The men in the nest had thrown gasoline on the stranded man and set him afire. Doing the only thing that could be done, my father tossed two grenades into the pit, killing the enemy soldiers and ending his friend's agony. At the end of the battle, half-crippled from shrapnel, my father made his way toward shore. He awoke to find himself naked on the ground, covered with blood.

A medic eventually found him. Later, in a hospital in England, he defied a nurse's orders to stay put and made his way down to the basement showers to clean himself of the dirt, sweat, and blood that was D-Day. He said it was the coldest, most painful shower he'd ever taken, but he finally felt clean.

My father lived to a comfortable old age and passed away in peace. Every day I am reminded of this story, and that it was told only once: to a son, by his hero.

DAN GILLIAM

*Gansevoort, New York*

No words can express the feelings of those of us who were there: the pride for all our troops and the sorrow for those we lost. I was a young U.S. Army nurse in the 94th General Hospital, stationed near Bristol, England. My husband was a lieutenant with the 709th Tank Batallion, which landed on Omaha Beach. Our hospital had doubled in size by the 25th of May 1944—we knew that the date was not far off for the invasion. I was on duty on the night of June 5, and a group of us were walking to our ward just before 11 p.m. We were accustomed to seeing large flights of planes overhead, but this night was different. Some of

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## Great Boreal Forest

It came as a shock to read such biased, one-sided coverage of logging in Alberta. Why don't you do an article condemning the demand side of the equation? It's the large appetite for pulp in the U.S. that drives Canada's forest industry. More forests are lost forever due to urban sprawl and farming than to clear-cut logging in North America. Clear-cuts do regrow.

BRENT McDOWELL
*Red Deer, Alberta*

We should be taking threats to the boreal, and all natural forests, seriously. We seem to be caught up with our own superficial needs and wants and are not able, or taught, to understand the effects of our self-indulgent actions. As someone who lives in that forest and sees it ripped and trampled daily, I do not know how much longer it can hang on. In Alberta individuals, the government, and industry destroy the forest daily, in the name of economics, and in ignorance.

JOAN SHERMAN
*Athabasca, Alberta*

FROM OUR ONLINE FORUM
nationalgeographic.com/ngm/0206

Referring to the logging that starves out beavers, trapper Dave Donahue was quoted as saying, "It turns my stomach to see all this." Donahue used to

PETER ESSICK

trap 240 beavers in a "good" year. That turns *my* stomach.

WAYNE MURRAY
*Camillus, New York*

Despite your article being panned by the government of Alberta, it is a frank portrayal of the environmental decay my province is inflicting upon itself.

ASHLEE JOLLYMORE
*Grande Prairie, Alberta*

the planes were towing gliders, and we understood. Around 5 a.m. the next morning, June 6, we were told that our troops were landing on Normandy and to expect massive casualties within the next 24 hours. We processed 3,000 patients the first three weeks after D-Day.

JEAN GRAGG NORMANDIN
*Redondo Beach, California*

The fold-out map indicates that Omaha Beach was taken by the First Infantry Division without making mention of the 29th Infantry Division.

RICK LANGILLE
*Alexandria, Virginia*

*Two regiments from the 29th Infantry Division were attached to the First Division on D-Day. We followed the U.S. Army Center of Military History's convention of naming the assault after the division in charge of the operation—in this case, the First.*

## Jamestown

As an amateur horologist and former watchmaker, I was dismayed to see the artifact on page 81 identified as simply a compass. The circular depression certainly once held a compass, but the incised lines and Roman numerals around the depression, as well as the remnants of the hole that once held a removable peg, clearly identify it as the remains of a handheld sundial. Careful examination should give you a good idea of the latitude that this sundial was designed for.

ADAM SMITH
*Milton, Ontario*

## Wolverines

I was intrigued by the map on page 70, which indicates that the former range of the wolverine did not extend to the state of Michigan. How, then, did Michigan acquire the nickname of the Wolverine State?

JIM STEFAN
*Nanuet, New York*

*The name may have come from Indians, who considered the wolverine gluttonous and gave the name to land-grabbing settlers. Or perhaps it came from Ohioans, who gave members of the Michigan militia the nickname because they were rumored to have fought as viciously as wolverines in an 1835 border dispute.*

## Long Road Home

In Lois Raimondo's article on Afghanistan Ahmad Zia Masud, her interpreter, states, "I can no longer hate America, because you are there." I believe that says

**WRITE TO FORUM**

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I want to share in her happiness



Sometimes I wonder which one of us has more wisdom and which one has more joy. And we both thank plastic. Because it's more than a toy: It's in my hip replacement and my hearing aid, so I can help her see that nothing will hold me back. With a little help, we can share this happiness for years to come.

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it all. We all need to get to know the people of other countries. Once we have friends around the world, we cannot think of hating those people indiscriminately. Unfortunately, most of us cannot travel everywhere or stay long enough to make friends. So we have to do the next best thing. The more we read and learn of other countries, even those we disagree with, the more we will be able to understand them, and they us. Never before, it seems to me, has this been so important.

LUCY FUCHS
*Brandon, Florida*

I must tell you that you have exceeded this liberal's tolerance for stories about Islam and Afghanistan. Shortly after September 11, I welcomed information that provided greater understanding of a religion and culture so different from my own. Several months later, I'm tired of reading about the plight of people under a regime my government, in part, facilitated in a country that seems disinterested in real change. If Masud is worried that exposure to the West will pollute his culture with consumerism and alternative lifestyles, I am worried that Islamic culture will pollute my free way of life with draconian values, punitive responses to human nature, and sexism unrivaled in even the most conservative cultures. These people have no respect for my way of life. Why must you romanticize theirs?

MAXINE HILLARY
*Arlington, Virginia*

Lois Raimondo's presence in Afghanistan as a foreign woman from a Judeo-Christian country was as inappropriate as a woman in a National Football League locker room. Why should Muslims be forced to betray their beliefs and submit to our wishes when we ramrod Western ideas into their midst by sending a woman to comingle with their men? And we wonder why some religious Muslims wish to harm us. If we want to survive as a nation, we must start to respect other cultures as they are and stop forcing upon them values that agitate them and cause them to hate us.

ALFRED HUETE
*Katy, Texas*

**Crawling up to see, my father found his partner fouled in a tree and hanging over an enemy machine gun nest. The men in the nest had thrown gasoline on the stranded man and set him afire.**

Thank you for a timely story about a meeting of cultures. This was the first time a story in NATIONAL GEOGRAPHIC moved me to tears. It must have been a powerful experience for Lois Raimondo and Ahmad Zia Masud to begin to understand another human being from a completely different culture. What a painful and rewarding journey for them and for us. Ms. Raimondo's telling made me feel as though I were there with them. It gives me hope that humans may still avoid destroying the world if we can only learn to listen to each other. The world changes, one person at a time.

DALE DEROUIN
*Dallas, Oregon*

The author's interpreter, Masud, states that if he were governing, any Muslim who converted to Christianity would die. What would the outcry be if someone in the U.S. said that any Christian who converted to Islam should die? It appears that only in "spiritually bankrupt" nations can Muslims, Christians, and members of other faiths live together in peace.

DAN LANGE
*White Bear Lake, Minnesota*

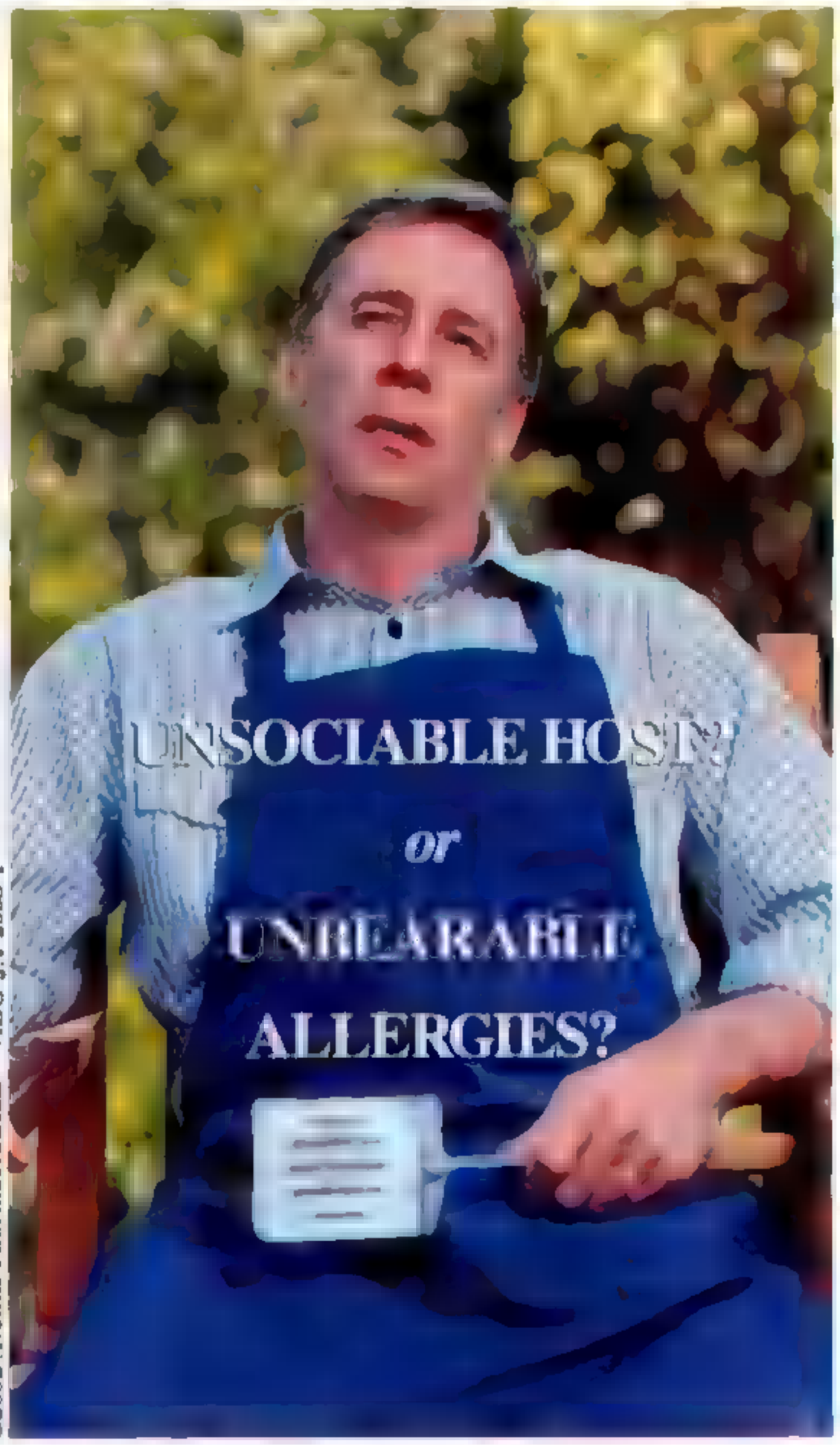
In her article Raimondo makes reference to American decadence. Decadence is so often used to describe us. But as I watch Afghanistan and the Middle East, it occurs to me that there is no greater decadence than killing to make conflict go away. And all in the name of Allah.

SANDRA KLEINBERG
*Fort Mitchell, Kentucky*

### ZipUSA: Ames, Iowa

The article brought back freshman memories of 1954 in Friley Hall. It appears that not much has changed. The most outrageous event that I recall was accomplished during the winter break. A group of Friley students dismantled the MG roadster of another student on holiday and reassembled it in his second-floor room. It was all in good fun, and the vehicle was in even better condition after reassembly by the same students back on the street.

ART SUNDEEN
*Lansing, Michigan*







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**Please see additional important information on next page.**

Brief Summary of Prescribing Information as [redacted] November 2000

# ALLEGRA®
## (fexofenadine hydrochloride)
### Capsules and Tablets

**INDICATIONS AND USAGE**

**Seasonal Allergic Rhinitis**

ALLEGRA is indicated for the relief of symptoms associated with seasonal allergic rhinitis in adults and children 6 years of age and older. Symptoms treated effectively were sneezing, rhinorrhea, itchy nose/palate/throat, itchy/watery/red eyes.

**Chronic Idiopathic Urticaria**

ALLEGRA is indicated for treatment of uncomplicated skin manifestations of chronic idiopathic urticaria in adults and children 6 years of age and older. It significantly reduces pruritus and the number of wheals.

[redacted]

ALLEGRA is contraindicated in patients with known hypersensitivity to any of its ingredients.

**PRECAUTIONS**

**Drug Interaction with Erythromycin and Ketoconazole**

Fexofenadine hydrochloride has been shown to exhibit minimal (ca. 5%) metabolism. However, co-administration of fexofenadine hydrochloride with ketoconazole and erythromycin led to increased plasma levels of fexofenadine hydrochloride. Fexofenadine hydrochloride had no effect on the pharmacokinetics of erythromycin and ketoconazole. In two separate studies, fexofenadine hydrochloride 120 mg twice daily (two times the recommended twice daily dose) was co-administered with erythromycin 500 mg every 8 hours or ketoconazole 400 mg once daily under steady-state conditions to normal, healthy volunteers (n=24, each study). No differences in adverse events or $QT_c$ interval were observed when patients were administered fexofenadine hydrochloride alone or in combination with erythromycin or ketoconazole. The findings of these studies are summarized in the following table:

**Effects on steady-state fexofenadine hydrochloride pharmacokinetics after 7 days of co-administration with fexofenadine hydrochloride 120 mg every [redacted] hours (two times the recommended twice daily dose) in normal volunteers (n=24)**

| *Concomitant Drug* | $C_{maxSS}$ *(Peak plasma concentration)* | $AUC_{(TAU,0)}$ *(Extent of systemic exposure)* |
|---|---|---|
| Erythromycin (500 mg every 8 hrs) | ↑82% | ↑109% |
| Ketoconazole (400 mg once daily) | ↑135% | ↑164% |

The changes in plasma levels were within the range of plasma levels achieved in adequate and well-controlled clinical trials.

The mechanism of these interactions has been evaluated in *in vitro*, *in situ*, [redacted] *in vivo* animal models. These studies indicate that ketoconazole or erythromycin co-administration enhances fexofenadine gastrointestinal absorption. *In vivo* animal studies also suggest that in addition to increasing absorption, ketoconazole decreases fexofenadine hydrochloride gastrointestinal secretion, while erythromycin may also decrease biliary excretion.

**Drug Interactions with Antacids**

Administration of 120 mg of fexofenadine hydrochloride (2 x 60 mg capsule) within 15 minutes of an aluminum and magnesium containing antacid (Maalox®) decreased fexofenadine AUC by 41% and $C_{max}$ by 43%. ALLEGRA should not be taken closely in time with aluminum and magnesium containing antacids.

**Carcinogenesis, Mutagenesis, Impairment of Fertility**

The carcinogenic potential and reproductive toxicity of fexofenadine hydrochloride were assessed using terfenadine studies with adequate fexofenadine hydrochloride exposure (based on plasma area-under-the-concentration vs time [AUC] values). No evidence of carcinogenicity was observed in an 18-month study in mice and in a 24-month study in rats at oral doses up to 150 mg/kg of terfenadine (which led to fexofenadine exposures that were respectively approximately 3 and 5 times the exposure from the maximum recommended daily oral dose of fexofenadine hydrochloride in adults and children).

In *in vitro* (Bacterial Reverse Mutation, CHO/HGPRT Forward Mutation, and Rat Lymphocyte Chromosomal Aberration assays) and *in vivo* (Mouse Bone Marrow Micronucleus assay) tests, fexofenadine hydrochloride revealed no evidence of mutagenicity.

In rat fertility studies, dose-related reductions in implants and increases in postimplantation losses were observed at an oral dose of 150 mg/kg of terfenadine (which led to fexofenadine hydrochloride exposures that were approximately 3 times the exposure of the maximum recommended daily oral dose of fexofenadine hydrochloride in adults).

**Pregnancy**

**Teratogenic Effects: Category C.** There was no evidence of teratogenicity in rats or rabbits at oral doses of terfenadine up to 300 mg/kg (which led to fexofenadine exposures that were approximately 4 and 31 times, respectively, the exposure from the maximum recommended daily oral dose of fexofenadine in adults).

There are no adequate and well controlled studies in pregnant women. Fexofenadine should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

**Nonteratogenic Effects.** Dose-related decreases in pup weight gain and survival were observed in rats exposed to an oral dose of 150 mg/kg of terfenadine (approximately 3 times the maximum recommended daily oral dose of fexofenadine hydrochloride in adults based on comparison of fexofenadine hydrochloride AUCs).

**Nursing Mothers**

There are no adequate and well-controlled studies in women during lactation. Because many drugs are excreted in human milk, caution should be exercised when fexofenadine hydrochloride is administered to a nursing woman.

**Pediatric Use**

The recommended dose in patients 6 to 11 years of age is based on cross-study comparison of the pharmacokinetics of ALLEGRA in adults and pediatric patients and on the safety profile of fexofenadine hydrochloride in both adult and pediatric patients at doses equal to or higher than the recommended doses.

The safety of ALLEGRA tablets at a dose of 30 mg twice daily has been demonstrated in 438 pediatric patients 6 to 11 years of age in two placebo-controlled 2-week seasonal allergic rhinitis trials. The safety of ALLEGRA for the treatment of chronic idiopathic urticaria in patients 6 to 11 years of age is based on cross-study comparison of the pharmacokinetics of ALLEGRA in adult and pediatric patients and on the safety profile of fexofenadine in both adult and pediatric patients at doses equal to or higher than the recommended dose.

The effectiveness of ALLEGRA for the treatment of seasonal allergic rhinitis in patients 6 to 11 years of age was demonstrated in one trial (n=411) in which ALLEGRA tablets 30 mg twice daily significantly reduced total symptom scores compared to placebo, along with extrapolation of demonstrated efficacy in patients ages 12 years and above, and the pharmacokinetic comparisons in adults and children. The effectiveness of ALLEGRA for the treatment of chronic idiopathic urticaria in patients 6 to 11 years of age is based on an extrapolation of the demonstrated efficacy of ALLEGRA in adults with this condition and the likelihood that the disease course, pathophysiology and the drug's effect are substantially similar in children to that of adult patients.

The safety and effectiveness of ALLEGRA in pediatric patients under 6 years of age have not been established.

**Geriatric Use**

Clinical studies of ALLEGRA tablets and capsules did not include sufficient numbers of subjects aged 65 years and over to determine whether this population responds differently from younger patients. Other reported clinical experience has not identified differences in responses between the geriatric and younger patients. This drug is known to be substantially excreted by the kidney, and the risk of toxic reactions to this drug may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection, and may be useful to monitor renal function. (See CLINICAL PHARMACOLOGY).

**ADVERSE REACTIONS**

**Seasonal Allergic Rhinitis**

**Adults.** In placebo-controlled seasonal allergic rhinitis clinical trials in patients 12 years of age and older, which included 2461 patients receiving fexofenadine hydrochloride capsules at doses of 20 mg to 240 mg twice daily, adverse events were similar in fexofenadine hydrochloride and placebo-treated patients. All adverse events that were reported by greater than 1% of patients who received the recommended daily dose of fexofenadine hydrochloride (60 mg capsules twice daily), and that were more common with fexofenadine hydrochloride than placebo, are listed in Table 1.

In a placebo-controlled clinical study in the United States, which included 570 patients aged 12 years and older receiving fexofenadine hydrochloride tablets at doses of 120 or 180 mg once daily, adverse events were similar in fexofenadine hydrochloride and placebo-treated patients. Table 1 also lists adverse experiences that were reported by greater than 2% of patients treated with fexofenadine hydrochloride tablets at doses of 180 mg once daily and that were more common with fexofenadine hydrochloride than placebo. The incidence of adverse events, including drowsiness, was not dose-related and was similar across subgroups defined by age, gender, and race.

**Table 1**

**Adverse experiences in patients ages 12 years and older reported in placebo-controlled seasonal allergic rhinitis clinical trials in the United States**

**Twice daily dosing with fexofenadine capsules at rates of greater than 1%**

| *Adverse experience* | *Fexofenadine 60 mg Twice Daily (n=679)* | *Placebo Twice Daily (n=671)* |
|---|---|---|
| Viral Infection (cold, flu) | 2.5% | 1.5% |
| Nausea | 1.6% | 1.5% |
| Dysmenorrhea | 1.5% | 0.3% |
| Drowsiness | 1.3% | 0.9% |
| Dyspepsia | 1.3% | 0.6% |
| Fatigue | 1.3% | 0.9% |

**Once daily dosing with fexofenadine hydrochloride tablets at rates of greater than 2%**

| *Adverse experience* | *Fexofenadine 180 mg once daily (n=283)* | *Placebo (n=293)* |
|---|---|---|
| Headache | 10.6% | 7.5% |
| Upper Respiratory Tract Infection | 3.2% | 3.1% |
| Back Pain | 2.8% | 1.4% |

The frequency and magnitude of laboratory abnormalities were similar in fexofenadine hydrochloride and placebo-treated patients.

**Pediatric.** Table 2 lists adverse experiences in patients aged 6 to 11 years of age which were reported by greater than 2% of patients treated with fexofenadine hydrochloride tablets at a dose of 30 mg twice daily in placebo-controlled seasonal allergic rhinitis studies in the United States and Canada that were more common with fexofenadine hydrochloride than placebo.

**Table 2**

**Adverse experiences reported in placebo-controlled seasonal allergic rhinitis studies in pediatric patients ages 6 to 11 in the United States and Canada at rates of greater than 2%**

| *Adverse experience* | *Fexofenadine 30 mg twice daily (n=209)* | *Placebo (n=229)* |
|---|---|---|
| Headache | 7.2% | 6.6% |
| Accidental Injury | 2.9% | 1.3% |
| Coughing | 3.8% | 1.3% |
| Fever | 2.4% | [redacted] |
| Pain | 2.4% | 0.4% |
| Otitis Media | 2.4% | 0.0% |
| Upper Respiratory Tract Infection | 4.3% | 1.7% |

**Chronic Idiopathic Urticaria**

Adverse events reported by patients 12 years of age and older in placebo-controlled chronic idiopathic urticaria studies were similar to those reported in placebo-controlled seasonal allergic rhinitis studies. In placebo-controlled chronic idiopathic urticaria clinical trials, which included 726 patients 12 years of age and older receiving fexofenadine hydrochloride tablets at doses of 20 to 240 mg twice daily, adverse events were similar in fexofenadine hydrochloride and placebo-treated patients. Table 3 lists adverse experiences in patients aged 12 years and older which were reported by greater than 2% of patients treated with fexofenadine hydrochloride 60 mg tablets twice daily in controlled clinical studies in the United States and Canada and that were more common with fexofenadine hydrochloride than placebo. The safety of fexofenadine hydrochloride in the treatment of chronic idiopathic urticaria in pediatric patients 6 to 11 years of age is based on the safety profile of fexofenadine hydrochloride in adults and adolescent patients at doses equal to or higher than the recommended dose (see Pediatric Use).

**Table 3**

**Adverse experiences reported in patients 12 years and older in placebo-controlled chronic idiopathic urticaria studies in the United States and Canada at rates of greater than 2%**

| *Adverse experience* | *Fexofenadine 60 mg twice daily (n=185)* | *Placebo (n=178)* |
|---|---|---|
| Back Pain | 2.2% | 1.1% |
| Sinusitis | 2.2% | 1.1% |
| Dizziness | 2.2% | 0.6% |
| Drowsiness | 2.2% | 0.0% |

Events that have been reported during controlled clinical trials involving seasonal allergic rhinitis and chronic idiopathic urticaria patients with incidences less than 1% and similar to placebo and have been rarely reported during postmarketing surveillance include: insomnia, nervousness, and sleep disorders or paronitia. In rare cases, rash, urticaria, pruritus and hypersensitivity reactions with manifestations such as angioedema, chest tightness, dyspnea, flushing and systemic anaphylaxis have been reported.

**OVERDOSAGE**

Reports of fexofenadine hydrochloride overdose have been infrequent and contain limited information. However, dizziness, drowsiness, and dry mouth have been reported. Single doses of fexofenadine hydrochloride up to 800 mg (six normal volunteers at this dose level), and doses up to 690 mg twice daily for 1 month (three normal volunteers at this dose level) or 240 mg once daily for 1 year (234 normal volunteers at this dose level) were administered without the development of clinically significant adverse events as compared to placebo.

In the event of overdose, consider standard measures to remove any unabsorbed drug. Symptomatic and supportive treatment is recommended.

Hemodialysis did not effectively remove fexofenadine hydrochloride from blood (1.7% removed) following terfenadine administration.

No deaths occurred at oral doses of fexofenadine hydrochloride up to 5000 mg/kg in mice (110 times the maximum recommended daily oral dose in adults and 200 times the maximum recommended daily oral dose in children based on mg/m²) and up to 5000 mg/kg in rats (230 times the maximum recommended daily oral dose in adults and 400 times the maximum recommended daily oral dose in children based on mg/m²). Additionally, no clinical signs of toxicity or gross pathological findings were observed. In dogs, no evidence of toxicity was observed at oral doses up to 2000 mg/kg (300 times the maximum recommended daily oral dose in adults and 530 times the maximum recommended daily oral dose in children based on mg/m²).

Prescribing Information as of November 2000

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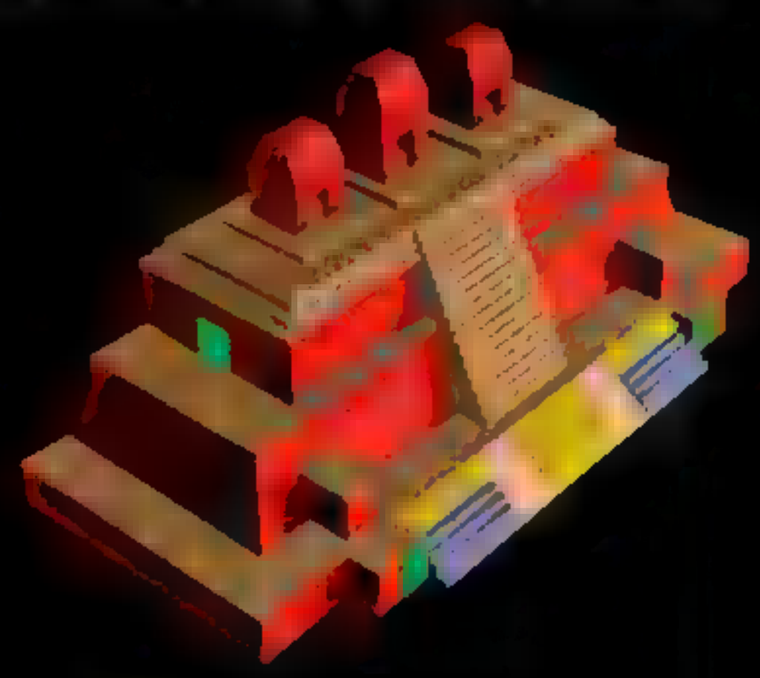
NGS RESEARCH GRANT

# A New Chapter in Maya History: All-out

*Decades of ongoing history, just discovered, may foreshadow the end of a civilization*

Deep in the rain forest of Guatemala last year, something—maybe a falling tree—exposed stone hieroglyphs (above) on the stairs (opposite, at left) of an ancient pyramid at the Maya ruin of Dos Pilas. Now those previously unknown glyphs have been translated, and their story of a protracted war may help explain the downfall of a civilization at the height of its glory.

As soon as park ranger Julio López discovered the glyphs, he called for help: The stones had to be protected from looters. (Thieves had recently cut off part of one of Dos Pilas's stelae, a inscribed carved stone pillar, with a power saw.) Now two guards with shotguns stand watch, but that's likely not as much of a deterrent as a reduced market value for the glyphs. Looters might have a hard time selling them now that they've been published with the help of emergency funds from Vanderbilt University, the Foundation for the Advancement of Mesoamerican Studies, and the National Geographic Society.




ART BY JOHN R. ANDERSON, JR., NGM ART

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## War, Shifting Alliances, Bloody Sacrifices

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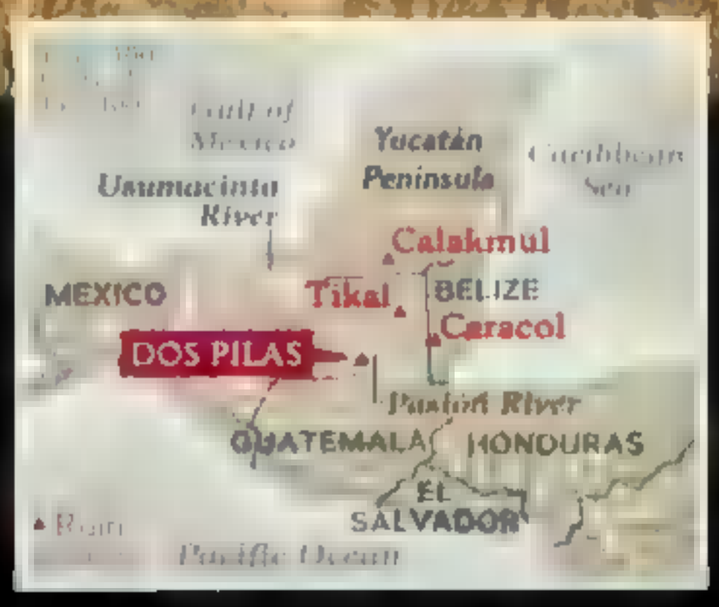
The story told by the glyphs begins on the ground's central stairway (above, behind Vanderbilt's Arthur Demarest and Federico Fahsen). On October 15, 625, a royal son named Balaj Chan K'awiil was born in the great Maya city of Tikal. Four years later he was sent to eventually rule over the settlement of Dos Pilas. "Dos Pilas was set up as a base to conquer the middle Pasión River, the superhighway of the Maya," says Demarest. "We think Tikal was fighting a Maya world war with Calakmul, now in Mexico."

The inscription starts on the left and right sides. "Balaj Chan K'awiil was a very big warrior," says Fahsen. "He almost never suffered defeats." When the king was in his early 20s, Calakmul attacked and defeated Dos Pilas but let him in place as its vassal. Loyal to Calakmul, the king eventually defeated Tikal and brought its ruler—his own brother—and other Tikal nobles to Dos Pilas to be sacrificed. "This section of the steps says, 'Mountains of skulls were piled up, and blood flowed,'" says Fahsen.

"That was a great victory," Demarest says. "After that Dos Pilas embarked on a campaign of conquest and became a major regional power."

Finally, Tikal roared back and crushed Calakmul.

Most Maya scholars thought that these conflicts were nothing more than a rivalry between two brothers (see "The Violent Saga of a Maya Kingdom," by Arthur A. Demarest, National Geographic, February 1993). But Fahsen and Demarest now




finding the evidence supports recent theories that these battles were part of a greater war between superpowers—war that may have been the cause of the Classic Maya civilization.

By about 810 almost all the western Maya cities, including Dos Pilas, were abandoned and destroyed.

—R. Williams

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NGS RESEARCH GRANT

# Climbing the Family Tree

ART BY [illegible] KLINGLER

Ever since their beginnings, primates have been splendidly adapted for life in the trees—at least until our hominid ancestors climbed down from the canopy a few million years ago.

Now scientists have discovered that this lifestyle likely existed much deeper in the family tree, back in the time when eutherians, the group that represents about 90 percent of living mammals (including placental mammals from rodents to humans), had begun to differentiate themselves from marsupials (mammals with pouches).

A team led by Ji Qiang of the Chinese Academy of Geological Sciences has unearthed a 125-million-year-old fossil of a seven-inch-long eutherian called *Eomaia scansoria*, or "dawn mother who climbs," in Liaoning Province. It's so well preserved that its fur, teeth, and tiny foot and hand bones can still be distinguished. *Eomaia*'s fingers and toes are long and tipped with curved claws, adaptations for life in the branches.

The fossil is about 50 million years older than the earliest eutherians previously known. Because those creatures weren't adapted to life in trees, most paleontologists assumed that eutherians evolved from ground dwellers. The *Eomaia* find could mean that today's eutherians come from a lineage that's been up in the trees since deep in the age of dinosaurs.

—*Christopher P. Sloan*

SKYWATCHING

# Dark Victory

The night skies over central Europe just got a little darker. The Czech Republic has become the first country in the world to enact a national law against light pollution.

A growing problem worldwide, light pollution is caused by bright nighttime lighting that disperses beyond the area intended. In cities, lights that project upward can obscure the stars and planets, a problem for astronomers. But stargazers aren't the only ones affected. Glare caused by poorly designed light fixtures also degrades visibility for drivers and pedestrians.

The Czech law requires modification of fixtures such as this one in Prague (above). Jenik Hollan, an astronomer at the Nicolaus Copernicus observatory in Brno, has already noticed improvement on the streets, if not yet in the skies. "Everything is much more visible, with reduced glare," he says. Still, full compliance with the law may take a while. As Hollan notes, "There are 40,000 streetlamps in Brno alone." —*Margaret G. Zackowitz*

ANDREA [illegible]/GETTY IMAGES

CAVING

# The Ultimate Hole in the Ground

*A deeper view of mining*

**Imagine sliding straight down** a rope through a hole in the Earth that descends 586 feet—that's 31 feet farther than the height of the Washington Monument. You're sprayed by a waterfall on the way down, a jaw-dropping free-plunge trip.

"It's big and it's beautiful, and it's a wonderful rappel," says Dave Cousineau, a Walker Cave and Karst Research Fantastic Pit, part of Ellison's Cave System in northwestern Georgia and the deepest free-fall cave pit in the contiguous United States, was discovered and mapped by cavers in 1968. A steady stream of adventurers has trickled.

But a mining operation has cavers and residents concerned. Last spring, about two miles from Ellison's, a new cave called Flowing Stone was discovered. It boasts its own 224-foot-deep pit and unusual cave pearl formations. A company quarrying limestone in the area wants to expand its surface mineral lease to include Flowing Stone. "The quarrying could completely destroy the cave, and blasting would cause hiking trails to be closed," says Cousineau. "Although Ellison's isn't in danger of being quarried right now, additional blasting could cause portions of the cave to collapse."

John L. Ellis

PHOTO BY ALVAREZ

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CHEMISTRY

## From Brew to Phew

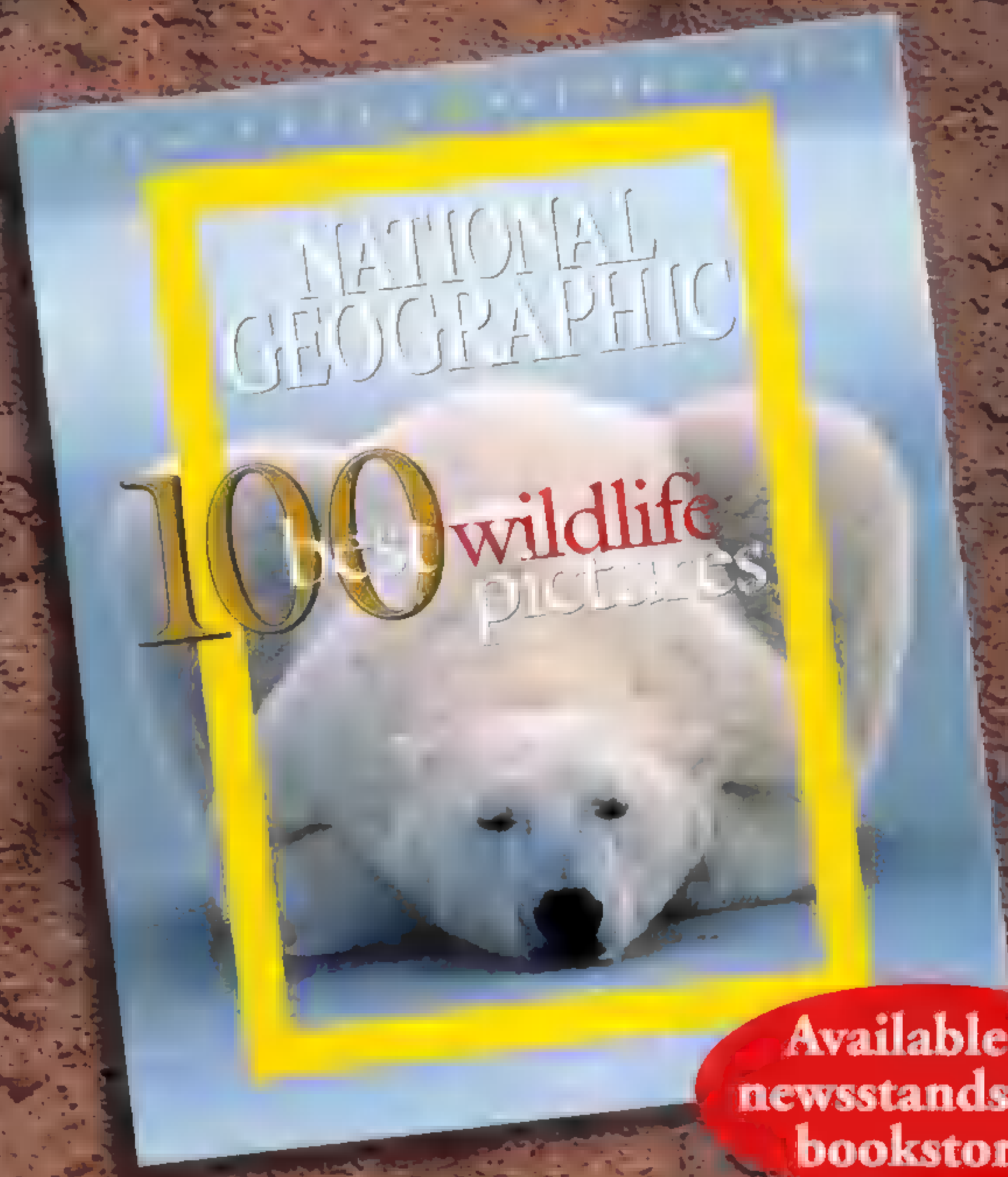
Any frat boy can tell you what "skunky" beer is. Now it turns out that the term is more appropriate than he might think. When beer is exposed to light over time, substances in hops—the ingredient in beer that imparts its distinctive taste—release a chemical that's almost identical to a skunk's spray. Chemists at the University of North Carolina at Chapel Hill and Ghent University, Belgium, have discovered the details of how good beer goes bad. This is happy news for beer manufacturers, most of whom use expensive colored bottles to protect their brews from light. Understanding the process can help brew manufacturers find better ways to keep beer from going skunky in clear bottles. "Beer companies want to use clear bottles," says Malcolm Forbes, who led the study. "They're cheaper, and more easily recycled."

The discovery has done wonders for Forbes's lab's popularity among grad students, but he insists that only concentrated hops compounds were used for the research. "There was no beer drinking during the study," he says. "Just after."

*—MGZ*


ART BY HAL MAYFORTH

# Coming in November!

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NATIONAL GEOGRAPHIC

# Behind the SCENES

AT THE NATIONAL GEOGRAPHIC SOCIETY

LOIS RAIMONDO, WASHINGTON POST (ABOVE)

# Investing in a Brighter Future

*Readers pour out hearts and dollars to help educate Afghan girls*

To the more than 4,100 readers who have contributed to the Afghan Girls Fund, created by the Society to develop educational opportunities for the girls and young women of Afghanistan (like these, above), thank you.

The fund—established after the rediscovery early this year of Sharbat Gula, whose face first appeared on the cover of our June 1985 issue (inset)—has raised more than $450,000.

"In many ways Sharbat is a metaphor for the suffering of an entire generation of people in Afghanistan, and especially for the circumstances of young women who received no education," says Betty Hudson, the Society's senior vice president for communications. In conjunction with the nonprofit Asia Foundation, the Society is setting up a center in Kabul to feed, educate, and provide vocational training for several hundred girls ages 12 to 17 who now scavenge for food and beg on Kabul's streets.

Gifts from one dollar to thousands have come via the Web (a quarter of all gifts) and the post office. School children have sent funds raised at bake sales, fairs, and bazaars. You can still contribute at *nationalgeographic.com/help* or by sending a check to Afghan Girls Fund, Development Office, National Geographic Society, 1145 17th Street NW, Washington, DC 20036-4688.

*Photographed by Luiz Claudio Marigo*

# WILDLIFE AS CANON SEES IT

Perched on a mesquite tree, a pair of yellow-shouldered Amazons brighten their arid habitat. These colorful parrots forage daily on fruits, blossoms and seeds of cactus and thorny scrub, returning before sunset to their nightly roosting sites in nearby valleys and woodlands. Females lay two to four eggs in a nest cavity; however, month-old chicks are often removed from their nest by poachers. An active local pet trade and habitat loss threaten the yellow-shouldered Amazon. But on Margarita Island, public awareness programs, along with protection and ecological studies of the yellow-shouldered Amazon, have resulted in increased numbers.

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**Yellow-shouldered Amazon**
*(Amazona barbadensis)*
**Size:** Length, 33 cm
**Weight:** Average 230 g
**Habitat:** Xerophytic vegetation in northern coastal Venezuela and on the islands of Margarita, La Blanquilla, and Bonaire (Netherlands Antilles)
**Surviving number:** Estimated at 4,000



NATURE

Canon

BOTH BY ZOE KEONE

# Reader Fixes an African Bridge

*Photo inspires Ethiopian rebuilding project*

Ken Frantz decided to fix an Ethiopian bridge because, he says, "I'm a boy, and boys love bridges." Happily, this "boy" owns a construction company.

Ken, 52, was waiting for mechanics to service a truck in his hometown of Gloucester, Virginia, when he picked up the December 2000 GEOGRAPHIC. He saw a photo of Ethiopians being hauled on a rope across the Blue Nile—a 360-year-old bridge there had been destroyed during the Italian occupation of 1935-1941. "I looked at the photo once, twice, three times," Ken recalls, "and it came to me: What I want to do is repair that bridge."

Ken helped launch Bridges to Prosperity, dedicated to building bridges to help create wealth in developing nations. The group surveyed the site (top), won backing from tribal elders, and chose a lightweight steel design. Donkeys toted in 25,000 pounds of supplies, and Ken, his crew, and Ethiopian volunteers rebuilt the bridge (above) in ten days at a cost of $108,000, largely donated by the organization's founders. "Half a million people live near the bridge," he says. "Now they can trade, get to hospitals and schools on the other side, and see family members they haven't seen for years." Ken's group has also built cableways in Nepal, a suspension bridge in Indonesia, and a second Ethiopian bridge.

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# Picture This: Our Own Magazine

*National Geographic Kids makes its debut*

ANNIE GRIFFITHS BELT (ABOVE); MARK THIESSEN (BELOW)

With a new name and a new logo but an unchanging mission—"to entertain kids while educating and exciting them about their world"—the Society's children's magazine relaunches itself this month after 26 years as *National Geographic World*. The new name, *National Geographic Kids*, "truly reflects what this magazine is," says Editor Melina Gerosa Bellows, "a magazine expressly for kids published by the National Geographic Society."

Along with the name change comes a renewed effort to make the publication relevant to 8- to 14-year-olds, its target audience—kids like these fourth graders (above) at New York's P.S. 234, an elementary school four blocks from ground zero. Senior editor Susan Hayes gave each class member a camera to document the school's reopening five months after the September 11 attacks. Their photos and accounts of the reopening appear in this month's issue.

The Society's successful year-old classroom publication, *National Geographic for Kids*, also gets a new handle. Now it's called *National Geographic Explorer*.

NATIONAL GEOGRAPHIC KIDS

# Risky Business

*TV crews prep for medical emergencies*

Laura Weinstein had just finished two weeks of round-the-clock filming in Egypt in record heat when she began to feel worn out. Next came an escalating three-day headache, then vomiting. Laura, an associate producer for National Geographic Television & Film, was rushed to a hospital, where she was diagnosed with sunstroke and severe dehydration. "I spent two days recovering on an IV drip," she says. "I remember thinking, 'I've wanted to explore Egypt my entire life—now I'm going to *die* here.'"

Not everyone who goes out in the field has a brush with mortality, but NGT&F's crews often return with scars. They've suffered snakebites, malaria, and stitches—after diving face-first onto a rock in a Belize river. EXPLORER host Boyd Matson alone has been thrown from a horse and a motorcycle, and had his eardrum perforated when a chimp fished for termites in his ear.

So it seemed like a good idea for TV folks to learn CPR and wilderness first aid. In one exercise (above) EXPLORER's Carrie Regan practiced rescue techniques by "evacuating" colleague Doug Nelson.

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# Patient Information about AVANDIA® (rosiglitazone maleate) 2 mg, 4 mg, and 8 mg Tablets

**What is *Avandia*?**
*Avandia* is one product in ■ class of prescription drugs called thiazolidinediones (thigh-a-zol-a-deen-die-owns) or TZDs. It is used to treat type 2 diabetes by helping the body use the insulin that it is already making. *Avandia* comes as pills that can be taken either once a day or twice a day to help improve blood sugar levels.

**How does *Avandia* treat type 2 diabetes?**
If you have type 2 diabetes, your body probably still produces insulin but ■ is not able to use the insulin efficiently. Insulin is needed to allow sugar to be carried from the bloodstream into many cells of the body for energy. If insulin is not being used correctly, sugar does not enter the cells very well and builds up in the blood. If not controlled, the high blood sugar level can lead to serious medical problems, including kidney damage, blindness and amputation.

*Avandia* helps your body use insulin by making the cells more sensitive to insulin so that the sugar can enter the cell.

**How quickly will *Avandia* begin to work?**
*Avandia* begins to reduce blood sugar levels within 2 weeks. However, since *Avandia* works to address an important underlying cause of type 2 diabetes, insulin resistance, it may take 8 to 12 weeks to ■■■ the full effect. If you do not respond adequately to your starting dose of *Avandia*, your physician may increase your daily dose to improve your blood sugar control.

**How should I take *Avandia*?**
Your doctor may tell you to take *Avandia* once a day or twice ■ day (in the morning and evening). It can be taken with or without meals. Food does not affect how *Avandia* works. To help you remember to take *Avandia*, you may want to take it at the same time every day.

**What if I miss ■ dose?**
<u>If your doctor has prescribed *Avandia* for use once a day:</u>
- As soon as you remember your missed dose, take one tablet anytime during the day.
- If you forget and go a whole day without taking a dose, don't try to make it up by adding another dose on the following day. Forget about the missed dose and simply follow your normal schedule.

<u>If your doctor has prescribed *Avandia* for use twice a day:</u>
- As soon as you remember the missed dose, take one tablet.
- Take the next dose at the normal time on the same day.
- Don't try to make up ■ missed dose from the day before.
- You should never take three doses on any single day in order to make up for a missed dose the day before.

**Do I need to test my blood for sugar while using *Avandia*?**
Yes, you should follow your doctor's instructions about your at-home testing schedule.

**Does *Avandia* cure type 2 diabetes?**
Currently there is no cure for diabetes. The only way to avoid the effects of the disease is to maintain good blood sugar control by following your doctor's advice for diet, exercise, weight control, and medication. *Avandia*, alone or in combination with other antidiabetic drugs (i.e., sulfonylureas or metformin), may improve these other efforts by helping your body make better use of the insulin it already produces.

**Can I take *Avandia* with other medications?**
*Avandia* has been taken safely by people using other medications, including other antidiabetic medications, birth control pills, warfarin (a blood thinner), Zantac® (ranitidine, an antiulcer product from GlaxoSmithKline), certain heart medications, and some cholesterol-lowering products. You should discuss with your doctor the most appropriate plan for you. If you are taking prescription or over-the-counter products for your diabetes or for conditions other than diabetes, be sure to tell your doctor. Sometimes a patient who is taking two antidiabetic medications each day can become irritable, lightheaded or excessively tired. Tell your doctor if this occurs; your blood sugar levels may be dropping too low, and the dose of your medication may need to be reduced.

**What should I discuss with my doctor before taking *Avandia*?**
*Avandia* in combination with insulin may increase the risk of serious heart problems. Because of this, talk to your doctor before using *Avandia* and insulin together. *Avandia* may cause fluid retention or swelling which could lead to or worsen heart failure, so tell your doctor if you have a history of these conditions. You should also talk to your doctor if you have liver problems, or if you are nursing, pregnant or thinking of becoming pregnant. If you are a premenopausal woman who is not ovulating, you should know that *Avandia* therapy may result in the resumption of ovulation, which may increase your chances of becoming pregnant. Therefore, you may need to consider birth control options.

**What ■■■ the possible side effects of *Avandia*?**
*Avandia* was generally well tolerated in clinical trials. The most common side effects reported by people taking *Avandia* were upper respiratory infection (cold-like symptoms) and headache. As with most other diabetes medications, you may experience an increase in weight. You may also experience edema (swelling) and/or anemia (tiredness). If you experience any swelling of your extremities (e.g., legs, ankles) or tiredness, notify your doctor. Talk to your doctor immediately if you experience edema, shortness of breath, an unusually rapid increase in weight, or other symptoms of heart failure.

**Who should not use *Avandia*?**
You should not take *Avandia* if you are in the later stages of heart failure or if you have active liver disease. The following people should also not take *Avandia*: People with type 1 diabetes, people who experienced yellowing of the skin with Rezulin® (troglitazone, Parke-Davis), people who are allergic to *Avandia* or any of its components and people with diabetic ketoacidosis.

**Why ■■■ laboratory tests recommended?**
Your doctor may conduct blood tests to measure your blood sugar control. Blood tests to check for serious liver problems should be conducted before starting *Avandia*, every 2 months during the first year, and periodically thereafter.

It is important that you call your doctor immediately if you experience unexplained symptoms of nausea, vomiting, stomach pain, tiredness, anorexia, dark urine, or yellowing of the skin.

**How should I store *Avandia*?**
*Avandia* should be stored at room temperature in ■ childproof container out of the reach of children. Store *Avandia* in its original container.

GlaxoSmithKline

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## Hotspot: New Zealand

Is there a bird more strange than New Zealand's nocturnal kakapo (left), the world's heaviest and only flightless parrot? Here's a better question: With only 86 left, will the species survive? Many of the unique creatures of this South Pacific archipelago, from kiwis to burrow-dwelling penguins, are struggling to hang on. Brain editor Bill Douthitt guides a virtual tour of Sounds map of New Zealand's bizarre wildlife and lush rain forests at *nationalgeographic.com/ngm/0210*.

## Useful Tools

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## Pyramid Power

Like Lara Croft—Obi, minus the with a lighter touch and without side arms—this Web explores Egypt on Egypt's ancient pyramids. Watch the opening of Tutankhamun's tomb and view a map of the Giza Plateau at *nationalgeographic.com/pyramids*.

## IN THE CIRCUIT COURT—THIRD JUDICIAL CIRCUIT—MADISON COUNTY, ILLINOIS

BRANDON T. RAGAN, a minor by JUANITA PICKETT as mother as natural guardian and next friend, JUANITA PICKETT, and J. EVANSON, D.C., individually and on behalf of all others similarly situated, Plaintiffs, v. **TRAVELERS PROPERTY CASUALTY COMPANY, TRAVELERS INDEMNITY COMPANY** and **TRAVCO INSURANCE COMPANY** Defendants. Case No. L Judge Byron

SUMMARY NOTICE—NOTICE OF CLASS ACTION DETERMINATION, CLASS DESCRIPTION, PENDENCY OF PROPOSED SETTLEMENT, AND HEARING SETTLEMENT TO: (1) All Individuals Who, During Period From September 7, 19 July 29, 2002, Purchased An Automobile Insurance Policy From **Travelers Property Casualty Corp.** sued as **Travelers Property Casualty Company, The Travelers Indemnity Company**, sued as **Travelers Indemnity Company, Travco Insurance Company**, Any Their Parents, Affiliates, Stockholders, Subsidiaries Divisions Or Any Successors, Assigns Or Legal Representatives thereof, (collectively referred to as "**Travelers**"), That Contained Medical Payments Personal Injury Protection Coverage (the "Policyholder Class") and (2) Individuals Who, During the Period From September 7, 1989 to July 29, 2002, Were Injured In Automobile Accident While A Driver or Passenger in an Automobile Insured **Travelers** Auto Insurance Policy, and Who: (A) Submitted Claims for Payment of Medical to **Travelers** Relating To Their Injuries Arising From the Auto Accident In Question, ( Their Claims Submitted To Form of Third Party Bill Review; (C) Received Amount Less Than the Amount of the Submitted Medical Bills, And (D) In Connection With The Accident In Question, Received Less Than the Full Amount of the Stated Medical Payments or Personal Injury Pr Policy Limits, And/Or the Medical Providers/Entities of the Individuals Described Above Who Provided The Medical Services As To Which These Individuals Submitted the Medical Bills In Question to Travelers (the "Loss Class"). The Loss Class Does Not Include Any Individual or Medical Provider Already Engaged in Any Type of Adjudicative Proceeding with Travelers Related to the Subject Matter of the Action or this Settlement.

Class action litigation against **Travelers** (the "Action") has been pending in the Circuit Court in Madison County, Illinois (the "Court"). The parties to that Action have reached a Proposed Settlement. The Court has preliminarily certified, for ent purposes only, the Policyholder Class and the Loss Class described above, and has authorized publication of this Notice.

PLEASE TAKE NOTICE that the Court (Judge Nicholas G. Byron) will hold a hearing on December 16, 2002 at 9:00 a.m., at the Courthouse for the Circuit Court of Madison County, Illinois, Courtroom 327, Edwardsville, Illinois 62025, to determine: (1) the Class should be finally certified for settlement purposes; (2) whether the Proposed Settlement the case should be approved fair, reasonable and ; (3) whether the case should be dismissed with prejudice and without leave to amend pursuant to the terms of the Proposed Settlement; (4) whether Class Members should be bound by the release set forth in the Proposed Settlement; (5) whether Class Members should be permanently enjoined from, among other things, starting, continuing, participating in (as class members or otherwise), or receiving any benefits from, any other lawsuit, arbitration, or administrative, regulatory or other proceeding or order in any jurisdiction based on or relating to the claims, facts or circumstances in this Action and or the Released Claims (as defined in the Settlement Notice and Stipulation of Settlement); and (6) whether Plaintiffs' attorneys' application for an award of Attorneys' Fees and Costs should be approved.

Description of the Class: The Court certified, for settlement purposes only, a nationwide class of all claimants, for the class period September 7, 1989 through July 29, 2002, which includes the two the Policyholder and the Loss Class. While members of both subclasses are entitled to injunctive relief, only Loss Class members will be entitled to monetary relief. The Loss Class does not any individual or medical provider already engaged in any type of adjudicative proceeding with **Travelers** related to the subject matter of the Action or this Settlement. The parties have agreed that the Settlement will cover **Travelers**, as defined above.

A detailed Settlement Notice will be mailed to Potential Class Members upon request. If you are a potential member of either of the Classes described above, you should request a copy of the Settlement Notice immediately by calling the following toll free number: 800-572-9627, or by accessing the following websites: www.freedweiss.com or www.lakinlaw.com. The Settlement Notice describes the Proposed Settlement Class Members' rights. The Proposed Settlement and the scheduled Court hearing may affect those rights. The Court has appointed the following counsel as Settlement Class Counsel: Paul Weiss, Tod A. Lewis, FREED & WEISS LLC, 111 W. Washington Street, Suite 1331, Chicago, IL 60602, Email: Info@F and L. Thomas Lakin, Bradley . Lakin, THE LAKIN LAW FIRM P.C., 301 Evans Ave., P.O. Box 229, Wood River, IL 62095-1127, Email: Info@Lakinlaw.com.

**DO NOT TELEPHONE COURT OR CLERK OF THE COURT.**

Dated: July 29, 2002. Madison County, Edwardsville, Illinois, Honorable Nicholas Byron.

# National Geographic TV

SPECIAL

## Egypt Eternal

AMY BUCHER

The scene [illegible] for centuries: mourners [illegible] the dead [illegible]

for Egypt's early [illegible] of [illegible]. *Egypt Eternal: The Quest for* [illegible]

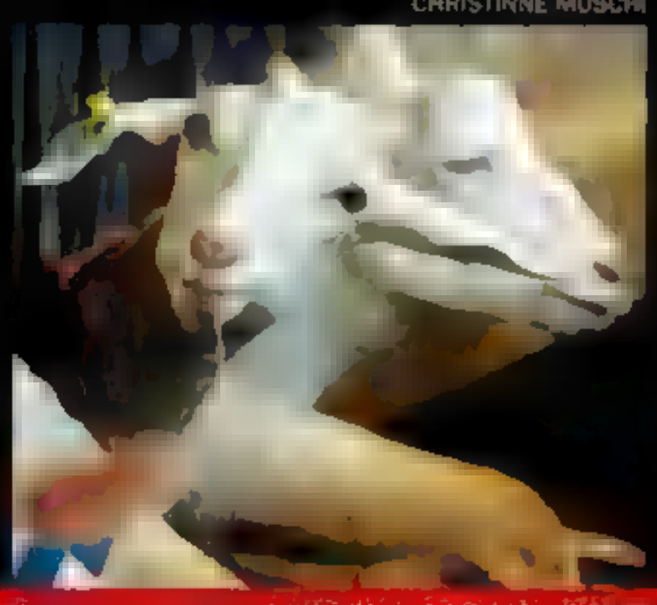
[illegible] Alain [illegible] into the city of the dead to find treasures—and [illegible]

NATIONAL GEOGRAPHIC [illegible]

## Killer Apps

[illegible] are [illegible] modified to produce milk [illegible] that may soon be spun and woven into [illegible]. EXPLORER reveals [illegible] human [illegible]

CHRISTINNE MUSCHI



BOB KNIGHT, CORBIS

NATIONAL GEOGRAPHIC [illegible]

## You're in the Army Now

[illegible] *West Point*, a [illegible] on a year [illegible] the U.S. Military Academy [illegible] cadets [illegible] day one, when they're shaved, tagged, barked at, and dressed (above). Watch brash newcomers learn what it takes to become leaders.



Programming information accurate [illegible] press time: consult local listings or our website at nationalgeographic.com

# Who Knew?

ASTRONOMY

## Quarked

*The cosmic unknown*

Science can get a reputation as narrow-minded just because it rejects things like Bigfoot and the claims that people can bend spoons with mind beams. But science has introduced us to its own magnificently weird phenomena: dinosaurs, an expanding universe, and so on. Now comes a report of a possible new member of the cosmic bestiary: the quark star.

The Chandra x-ray telescope satellite took a look at two objects euphoniously named RX J1856.5-3754 and 3C58. These were believed to be neutron stars—stars that exploded as supernovas, then collapsed under their own gravity, becoming so crunched that even their atoms imploded, leaving only an unimaginably dense knot of neutrons. A teaspoon of neutron star stuff, says NASA, weighs as much as all the cars, trucks, and buses on Earth.

Problem was, these stars didn't fit the neutron star model. They were *too* dense! Some astronomers think that Chandra may be peering at an entirely new form of matter. RX J, one team suggests, could be a quark star.

Quark stars are thought to be made of degenerate quark matter, which is not meant as an insult. The neutrons in these stars would have dissolved, leaving only a disorderly scrum of particles called up, down, and strange quarks.

Or maybe the model for neutron stars is wrong. While astronomers and theorists sort it out, we might ponder a bigger question: What else is out there? How complete is our census of the heavens?

Obviously we can't count the things we don't know. But we can speculate. Astronomer Martin Harwit has come up with his own statistical estimation of the cosmic unknown. He makes the analogy to baseball cards. You start the season collecting cards at random. Over time you encounter duplicates. The more cards you have, the more likely your next card will be a duplicate. By the time you've collected a hundred or so, you can use the rate of duplication to estimate the total number of cards.

Now shift to astronomy. Harwit some years ago listed all the phenomena we've already detected. Then he looked for what he calls duplicate discoveries. For example, pulsars—a type of neutron star detected in the 1960s with radio telescopes—would likely also have been discovered with more recent x-ray telescopes like Chandra.

His conclusion? "We probably have uncovered something on the order of a third to a half of the major phenomena." The easy discoveries are behind us. Those ahead will be increasingly elusive. Says Harwit, "It might take us many more centuries to come to the end of our search."

By which time we'll have motels orbiting quark stars.

*—Joel Achenbach*
WASHINGTON POST STAFF WRITER

**IT MATTERS**

**Only about half the solar energy bombarding our planet reaches the surface.** That's a good thing. Without the shield formed by Earth's magnetic field and atmosphere, no amount of sunscreen could protect us from skin cancer. It matters that we understand all the kinds of energy pulsing through the universe: Astronauts on a mission to Mars would be exposed to solar storms and galactic cosmic rays powerful enough to scramble their genes. Ground-based astronomers can study forms of energy that penetrate the shield—visible light, microwaves, radio waves, a bit of ultraviolet and infrared radiation. But they must launch instruments beyond the atmosphere to study the x-rays, gamma rays, and high-energy particles that make space a danger zone for unprotected humans.

*—Lynne Warren*

**MORE ON [illegible] SITE**

Learn more about quark stars and other cosmic phenomena—and find links to Joel Achenbach's work—at **nationalgeographic.com/ngm/resources/0210.**

CARY WOLINSKY WITH BARBARA [illegible]

# DEATH ON THE NILE

in stone, an [illegible] at the [illegible] now

A ROYAL
CEMETERY
REVEALS NEW CLUES
TO MURDER,
REVENGE, AND
INTRIGUE IN
ANCIENT EGYPT

as [illegible] where [illegible] and [illegible] are illuminating the [illegible]

FOR 3,000 YEARS KINGS AND
COURTIERS BUILT LAVISH TOMBS AT SAQQARA, WHICH
LIES AT THE HEART OF A VAST BURIAL GROUND.
SHOWCASES OF WEALTH AND POWER,
THE TOMBS EXPOSE THE FAITH AND
VANITY OF THOSE PREPARING FOR ETERNITY.

Crowning the fertile [illegible] of the Nile [illegible] the [illegible] is the world's [illegible] in stone.

of architecture.

BY A. R. WILLIAMS
NATIONAL GEOGRAPHIC SENIOR WRITER

PHOTOGRAPHS BY KENNETH GARRETT

Princess Idut didn't live to adulthood. The limestone reliefs that line her mortuary chapel show her only as a child. Finely modeled scenes celebrating the abundance of the Nile River Valley surround her—fish and waterfowl, a crocodile snapping at a newborn hippo, cows with their calves, gaggles of geese—all normal decoration for a royal Egyptian burial. But something isn't right.

"Idut has replaced someone else," says Naguib Kanawati, professor of Egyptology at Macquarie University in Sydney, Australia. "Look here," he continues, pointing to a rough patch by Idut's knee in a boating scene. "A foot has been erased, chiseled out and sanded over. And a man's kilt too." I can just make out the hint of a strapping male, standing tall, hovering behind the demure girl.

Princess Idut died around 2330 B.C. She was interred beneath her mortuary chapel, which stands near the pyramid tombs of her grandfather King Unas, and her father, King Teti, at the place now known as Saqqara. Site of Egypt's first monumental stone tombs, Saqqara was one of the most revered royal cemeteries of ancient Egypt—roughly equivalent to Arlington National Cemetery in the United States today.

When Idut's tomb was discovered in the mid-1920s, no one paid much attention to the altered reliefs. But recently Kanawati took a closer look and found traces of unexpected intrigue. "I've reread the hieroglyphs and identified the tomb's original owner," he says. "It was Ihy, a vizier, or prime minister, of King Unas." Like most wealthy, well-positioned Egyptians of his time, Ihy had spent years preparing his final resting place. So how did Princess Idut end up with it?

SOCIETY GRANT

This Research Committee project is supported by your Society membership.

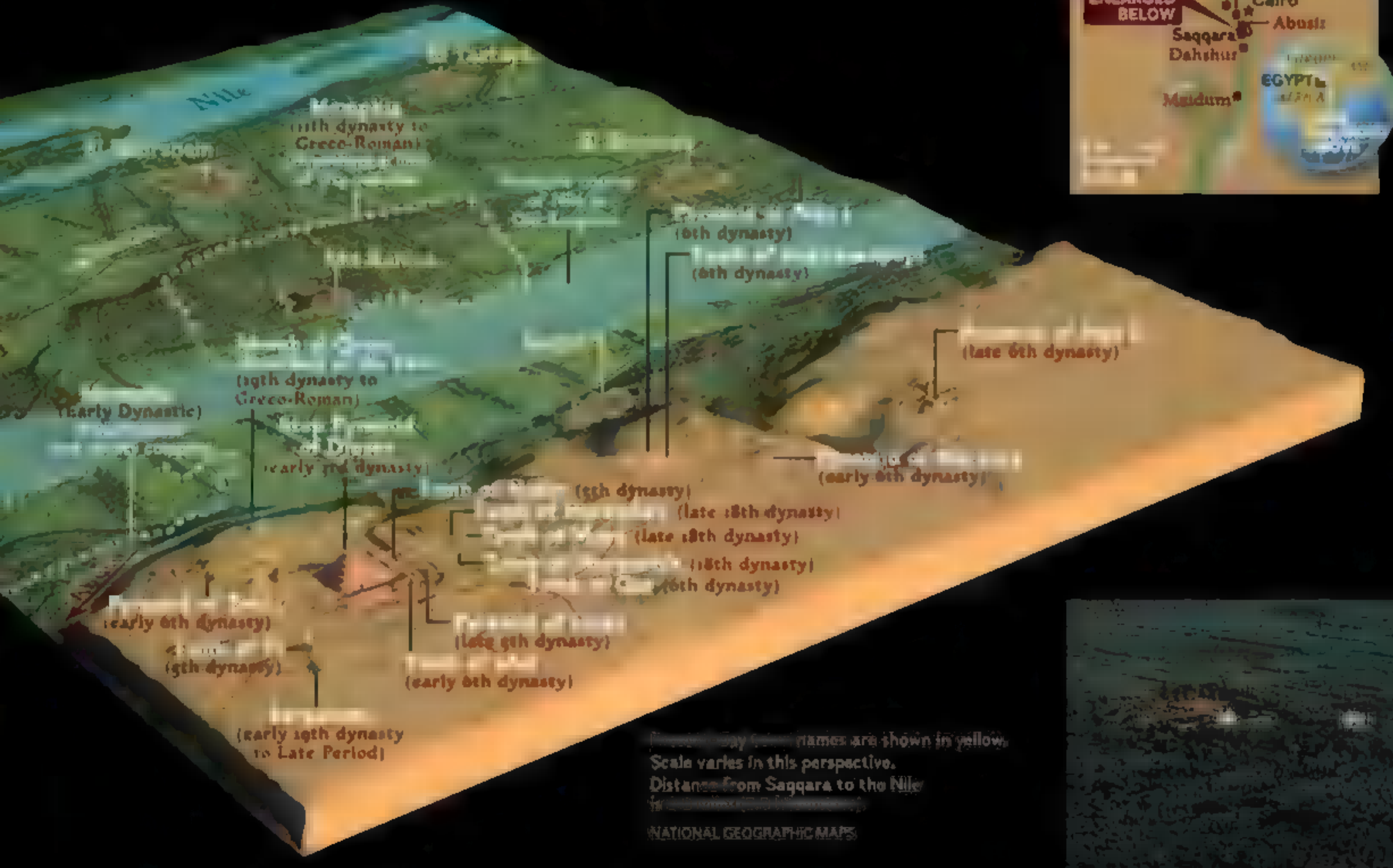
Kanawati's answer involves a tantalizing new theory about a palace coup and the mysterious circumstances surrounding King Teti's accession. "We don't know where Teti came from. We just know he married a daughter of Unas and became king when his father-in-law died. I think he came to the throne by force and Ihy opposed him, unsuccessfully." As an enduring punishment, Teti gave Ihy's tomb to a daughter.

This dynastic succession that once seemed so simple is one of many episodes acquiring a new spin at Saqqara, where burials span the entire 3,000 years and 31 dynasties of the ancient Egyptian civilization (time line, page 12). Focusing on periods when the site was most heavily used by the rich and powerful, archaeologists are discovering evidence for the kind of cloak-and-dagger dramas that would make headlines today—conspiracies, assassinations, acts of revenge, scheming queens, ambitious politicians, and religious extremes.

West of the emerald alfalfa fields and dusty green palm groves that flank the Nile, Saqqara rests atop a rocky escarpment the color of ripe wheat. Here the wind-rippled desert sand begins its sweep toward Libya. And here on the sunset bank of the Nile, the ancient Egyptians believed, was as close as mortal remains could get to the great beyond. In their view of the world, when the sun slipped beneath the desert horizon each evening, it traveled through the underworld ruled by Osiris, the god of the

# HALLOWED GROUND

AT THE DAWN of ancient Egypt some 5,000 years ago, the first kings seized control of Nile traffic at a spot where the river narrowed to little more than a mile across. Their settlement became the city of Memphis; their necropolis, centered at Saqqara, served as the royal cemetery.


[illegible] names are shown in yellow. Scale varies in this perspective. Distance from Saqqara to the Nile is [illegible].

NATIONAL GEOGRAPHIC MAPS

TOWERING OVER unknown numbers of tombs hidden by desert sands, the [illegible] Pyramid (right) was built around 2630 B.C. It remains a tribute to its architect, Imhotep, a [illegible] and engineer who after his death rose to divine status [illegible] a [illegible] of Imhotep (left) dating from about [illegible]

afterlife, until being reborn in the morning on the opposite side of the great river.

Saqqara was part of an immense burial ground that stretched for 45 miles along the Nile. "The cemeteries start at Abu Rawash in the north and continue on through Giza, Abusir, Saqqara, Dahshur, and Maidum," explains Zahi Hawass, secretary general of Egypt's Supreme Council of Antiquities and a National Geographic explorer-in-residence, running down the modern names of sites for me in a quick tutorial. This area just south of the Nile Delta has great strategic value because the river narrows here to form a natural gateway.

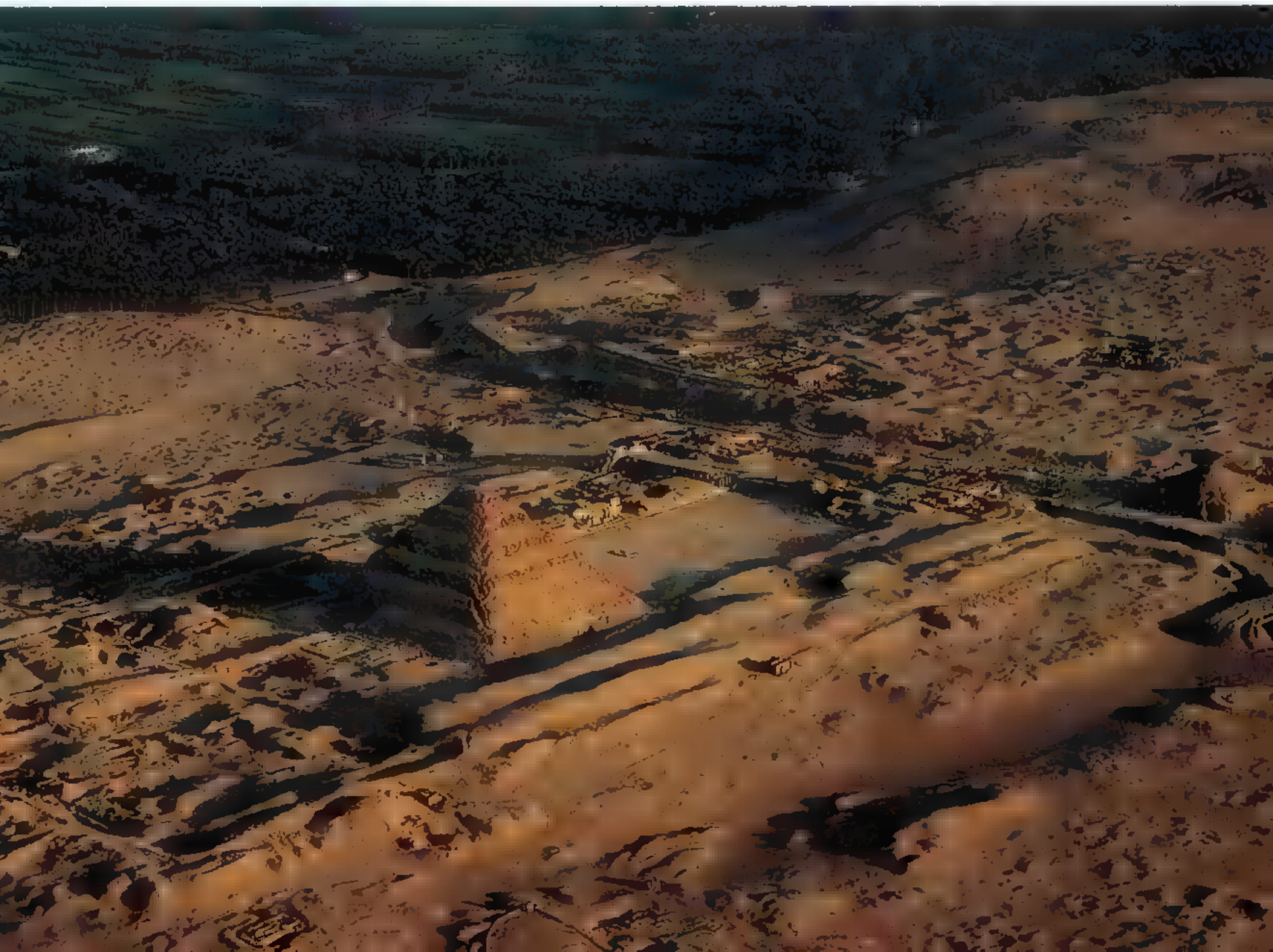
To control river traffic, and with it the rest of the country, kings of the very first dynasties fortified both riverbanks. They soon began to build palaces above the fertile floodplain—the beginning of Memphis, Egypt's early capital—and staked out their gravesites in the neighboring desert, where relatives and officials would surround them in death as they had in life.

Early tombs were cut into the bedrock and capped with a low mud-brick building known as a mastaba. Some survive as dark smudges in the ever encroaching sand, almost in the shadow of the 4,630-year-old tomb that elevated their form and changed the shape of royal burials: the Step Pyramid.

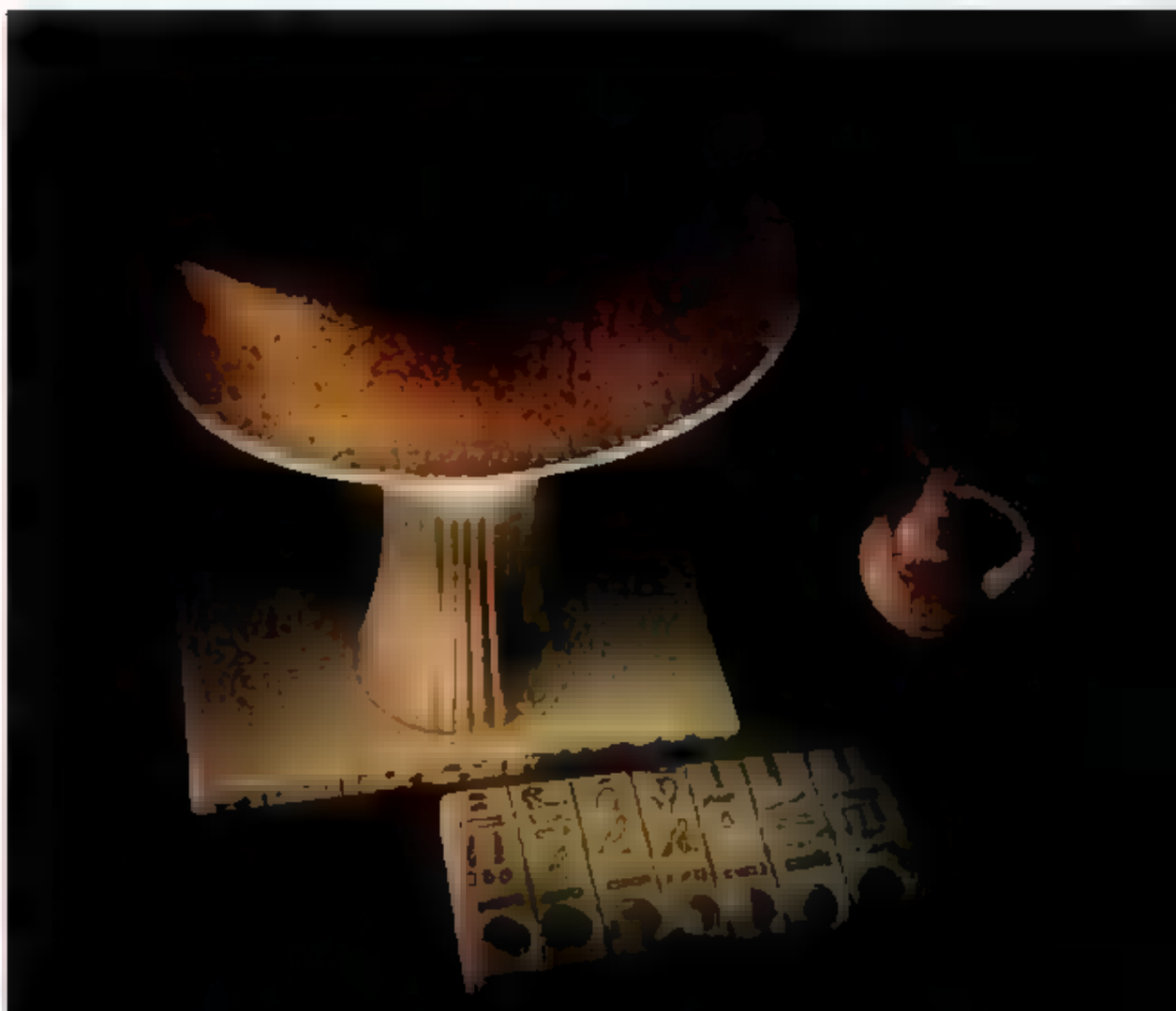
Rising skyward in six sand-dusted tiers, this tomb of King Djoser is the centerpiece of Saqqara. "This is the world's very first pyramid," says Hawass. "Imhotep, the architect, imitated the mud-brick prototype, but he stacked the mastabas on top of each other. And he built in stone." This monumental experiment inspired the construction of a hundred royal pyramid tombs along the Nile, almost two dozen of which have been discovered at Saqqara itself.

A PAIR OF RIVAL QUEENS buried at Saqqara have captured Hawass's attention recently. Both were married to King Teti, and each surely schemed against the other. Their names were Iput and Khuit. Hawass's work in the area around their tombs has uncovered hints that Teti's reign very likely ended the way it began—in upheaval.

Hawass guides me down a slope of scree and into his excavation site just northeast of Teti's own pyramid. Walking briskly through



# "SOMETHING CATASTROPHIC WE FIND THAT THERE WAS A HUGE CONSPIRACY.



PLOTTERS MURDERED King Teti around 2323 B.C. To avenge his father, Pepi I erased a [illegible] image from his tomb. "That means he got the [illegible] penalty," says Naguib Kanawati, examining the evidence. Pepi's [illegible] half brother, Tetiankh-Kem, also [illegible] died in [illegible] His tomb, which held an alabaster head [illegible] and other offerings (above), remained unfinished.

the stone courtyards and passages of side-by-side mortuary complexes, we stop between two rough hills of umber blocks and rubble. Stripped of their white limestone casing by workers building later tombs, these pyramids were buried by more than 20 feet of sand and forgotten. But Hawass is restoring both to their proper place in history.

"Iput's pyramid was found in the 1890s," he says, nodding to the mound on our left. "Everyone assumed she was the main wife of Teti because her son Pepi became king. But look what I found under a big pile of sand—Khuit's pyramid!" I follow his gaze to our right. "Khuit's was built first, so she must have come before Iput."

Glancing around to get my bearings, I realize we're traversing the bottom of a huge bowl that is still being dug out. Several feet above the top of Khuit's pyramid, young men in dark pants and sweatshirts swing their hoes and fill woven baskets with sand, rocks, and coarse red potsherds. Other workers hoist the bulging baskets to their shoulders and stagger off in a steady line to a spoil heap.

Hawass marches across a narrow ledge between a wall and a tomb shaft that plunges into darkness. I scurry across without looking into the abyss, and a quick turn brings us into the ruins of a mortuary chapel. The reliefs on the walls show lines of servants presenting the tomb owner with baskets of produce, jars of beer, legs of beef, loaves of bread. Some of the reliefs still have traces of paint.

"I found this burial complex too. It belongs to Tetiankh-Kem, Tetiankh the Black," says Hawass, reading the hieroglyphs on a sculpted door as easily as if they were yesterday's newspaper—which to him they are. "He was Khuit's son and King Teti's heir. We x-rayed his mummy and discovered that he died around age 25."

By now I'm lost: Teti's oldest son died young. Pepi, the son of second wife Iput, inherited the throne instead. Right? Maybe.

Or maybe not. The plot turns sinister here.

"This is a dark period," Hawass concedes when we meet in his book-filled office the next day. The ancient king lists are inconclusive. Some skip straight from Teti to Pepi I. But two insert a ruler—the mysterious Userkare—between father and son.

Adding his recent discoveries to the fragments of written evidence, Hawass constructs a plausible chain of events. "I think Khuit's son Tetiankh-Kem was killed with his father, King Teti. Maybe Userkare was even involved in the conspiracy, but he ruled only until Queen Iput managed to get her son Pepi on the throne."

More evidence that a conspiracy brought down Teti has come to light in the tombs of his officials, which hug the streets of a small neighborhood of the dead beside the pyramid of the king.

HAPPENED. THE MORE WE LOOK, THE MORE EVIDENCE MANY PEOPLE WERE PUNISHED." —NAGUIB KANAWATI

AS A BITTER WINTER WIND whips across the desert one morning, Naguib Kanawati and I take shelter in another mortuary chapel that was prepared by one person and used by someone else. "The original name was chiseled off and another was substituted—Seshemnefer," Kanawati says, directing me to a line of hieroglyphs in the depression left by the erasure. "He was a very minor official, and he says the tomb was assigned to him by the king."

"Now, look above the doorway." I see nothing, blinded by the sun streaming in. Kanawati takes off his wide gray scarf and blocks as much of the light as he can. Immediately, hieroglyphs pop out across the stone. "It's the name of the original owner of the tomb—Hezi, vizier of King Teti. Whoever was in charge of changing the reliefs probably missed this one." Just as I did. I feel like I'm visiting a crime scene with a first-rate detective.

Outside there's more. A series of gouges scars the two pillars of a portico and the boating scenes that flank the door. I had dismissed the damage as vandalism. Wrong again.

"Hezi was depicted in those places, but he was chiseled out very meticulously," says Kanawati. "The figures in these tombs are not just art. They're functional. The deceased lives through them. So to punish someone in the afterlife, you have to mutilate every figure."

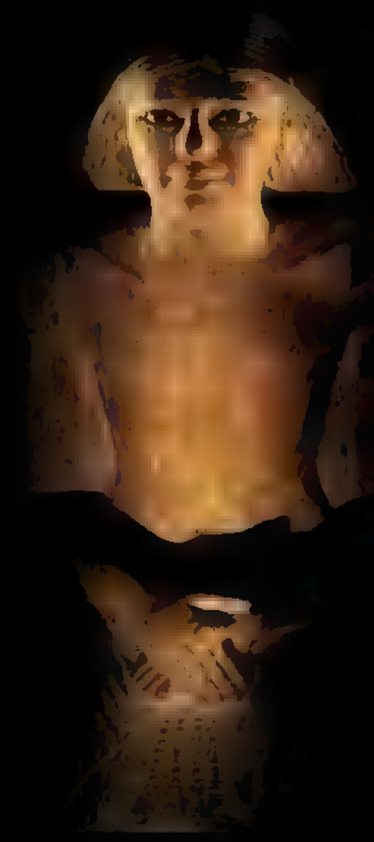
A man in Hezi's position likely understood that after death his *ka*, or life force, could return to this world through the figures in his tomb. He hoped relatives and priests would bring fresh offerings to sustain his ka, but in case they forgot or slacked off, he had his tomb filled with scenes that the ka could use. Provided with this magic in stone—food and drink, the support of servants, the company of singers and dancers, and opportunities to fish and hunt—the ka *(Continued on page 18)*


Late
(circa 3100 B.C.)
Old Kingdom
(dynasties 4–8,
B.C.)
1st Intermediate Period
Middle Kingdom
(dynasties 12–13,
ca 1975–1640 B.C.)
2nd Intermediate Period
New Kingdom
(dynasties 18–20,
ca 1539–1075 B.C.)
3rd Intermediate Period
Late Period
(dynasties 25–31,
ca 715–332 B.C.)
Greco-Roman
(332 B.C.–A.D.
Roman conquest
B.C.)
3000 B.C.
2000
1000
0

# IMMORTALITY OR OBLIVION?

WHICH WOULD DEATH BRING? HOPING FOR A HAPPY OUTCOME, EGYPTIANS SPENT YEARS PREPARING TOMBS REPLETE WITH OFFERINGS. TENDED BY FUNERARY PRIESTS, TOMBS WERE PORTALS TO THE AFTERLIFE.

A [illegible] NOW REBORN, the texts in [illegible] I's tomb took [illegible] years to reassemble from some [illegible]. Dating from [illegible] these texts are the most [illegible] in all [illegible]. They are [illegible] advice, and [illegible] to facilitate [illegible] to the next [illegible] Audran [illegible] above, [illegible] of the French [illegible] at Saqqara.



FUNERARY [illegible] DYNASTY [illegible] MUSEUM, CAIRO

## DEATH

*translation: Raise yourself. You have not died. Your life force will dwell with*

with a the tomb through the underworld. The *ka,* or life force as orbs), the family first, followed after by the *ba,* or soul. The leads the ba of the to the hall of judg

ART BY SAND; SOURCE METROPOLITAN MUSEUM OF ART, YORK

## JUDGMENT

*translation: my heart that I have had when on Earth, don't stand me as a witness, make a case against me beside the great god.*

The the heart; site of the feather of *maat,* or things as they should be. watch as If the heart is too or too light, a monster that part and part to a coma.

# ETERNITY

*translation: I have come forth in this day-time in my [illegible] as a living spirit. The place of my heart's desire is among the living in this land [illegible]*

If the heart balances, the [illegible] (top) and the [illegible] (with upheld [illegible]) reunite to form an *akh*, or [illegible] in the bright realm ruled [illegible]. The akh can now reenter the [illegible] world and enjoy its pleasures, including his wife's [illegible] and the attention of his servants. The [illegible] life [illegible] on the tomb walls is now his [illegible] eternity.

# "THESE ARE MEDICAL TOOLS
## BEEN USED FOR SENSITIVE OPERATIONS

*(Continued from page 11)* could continue to experience all the pleasures of the here and now. By destroying Hezi's tomb figures, someone permanently severed his access to the world of the living. What had the vizier done to be punished so severely?

Plotted against King Teti, Kanawati believes. The surviving heir, Pepi I, would then have taken everlasting revenge, altering and reassigning Hezi's tomb. "I can't say for sure that Teti was assassinated, but something catastrophic happened," Kanawati says. "The more we look, the more evidence we find that there was a huge conspiracy. Many people were punished."

Hezi was most likely one of the ringleaders. So were Teti's chief physician and the overseer of the armory, who received the same punishment. The official in charge of the palace guard seems to have played a lesser role. Only his nose and feet were chiseled from the reliefs in his chapel.

SOPHISTICATED for their day, these 4,300-year-old bronze surgical blades—the oldest known in Egypt, shown here for the first time—came from the tomb of a physician named Qar. A skull from another cemetery of the period shows evidence of an operation, likely done with similar instruments. Qar's tomb also held offering plaques and a tray for seven sacred oils.

Kanawati takes me from tomb to tomb, showing me the evidence he has collected and building his case. "For me," he says with a satisfied smile, "it's like Agatha Christie."

EXCAVATIONS near Pepi I's pyramid in the southern section of Saqqara have provided enough intrigue for at least another chapter in his family's saga—and new characters for me to keep straight. Audran Labrousse, director of the French Archaeological Mission, has uncovered seven new pyramids here. Three belong to wives of Pepi I, including Ankhesenpepi II, the most important woman of her time.

"She was one of two sisters from Abydos who married Pepi I," Labrousse begins over strong coffee in the French excavation house, which overlooks the Nile Valley from a cliff at the desert's edge. "Her name means 'she lives for Pepi.' Her sister's son Merenre became king when Pepi I died, but he ruled for only a few years. Then Ankhesenpepi's own son, Pepi II, came to the throne. He was about six, we think, so his mother became regent. She had real power, and you can see it in her tomb."

To get to her pyramid, we bounce into the desert in a Peugeot station wagon, pulling up between the pyramids of Pepi I and Merenre, both now hummocks of tumbled stones. Workers enlarging an already huge arena of tombs and temples load sand into rusty carts that roll on tracks to the dumps. We follow the faint scratch of a path to the bottom of the excavation and approach a jagged stone wall that holds back a heap of rock and sand. "This was a pyramid," says Labrousse, striding toward an opening at the base. "You'll have to trust me."

Skirting slabs of red granite that were once a portcullis, we climb down a ladder and crouch through a low sloping corridor. "She was not a king, but she was so close," Labrousse says,

FOR CUTTING AND SEWING. THEY COULD EVEN HAVE SUCH AS BRAIN SURGERY." —ZAHI HAWASS

stepping into Ankhesenpepi's burial chamber. Taking a flashlight from the woven excavation basket he uses as a briefcase, he shows me the sarcophagus, placed to the west near the dying sun. Then he traces the hieroglyphs that rain down the stone walls, column after incised column painted green, color of rebirth.

"This queen is the first female to be buried with a text like this," he explains, amazement coloring his voice. "Before her, the sacred incantations known as Pyramid Texts were for kings only. The deceased ruler had to pass through death to become immortal, and he did it with the help of these texts. He called out the words to make his body function again in the afterlife." Or, in this case, she did.

Ankhesenpepi must have been a remarkable woman. Royal wives before her had existed quietly in the background. Suddenly she stepped forward and claimed the strongest of the kings' magic spells. And that's not all.

Exiting the pyramid, Labrousse leads me through the ruins of her mortuary temple to an inscribed block of white limestone. "We once thought Merenre was Pepi II's half brother, but we threw out that theory when we found this," he says. "It clearly states that Ankhesenpepi was the wife of Pepi I, *and* the wife of Merenre, *and* the mother of Pepi II."

The genealogy is too complicated. I shake my head, unable to work it out. Labrousse tries again. "The widow of a king was no one. After the death of Pepi I, Ankhesenpepi would have gone back to the harem, but we think she managed to seduce her nephew Merenre. And fortunately, she had a son, Pepi II."

Now it makes sense. This woman was an early Cleopatra—alluring, savvy, ruthless.

Labrousse is trying to reconstruct the plan of her mortuary temple. So far he has a 17-ton red granite lintel, part of a limestone obelisk, and scattered stones from the walls. "She's

buried near Pepi I, but her tomb is turned toward Merenre's. So where was the door?" he wonders. "The queen's whole situation is complicated for us—imagine how it must have been for her."

Including his mother's regency, Pepi II may have reigned for more than 90 years—longer than any other king in Egyptian history. By the time he died in about 2175 B.C., the central government was close to collapse, and within the next two decades governors had seized control of their individual provinces. A lingering drought probably aggravated the political turmoil. Without rain there was no water for irrigation, crops failed, and hunger racked the entire population. The era known today as the Old Kingdom came to an end.

Subsequent kings reunified the country and moved the capital several times, but Memphis continued as a vital urban and religious center. "It was sort of like New York City, which was once the capital of the United States," says David Silverman, a professor of Egyptology at the University of Pennsylvania, where I visit him during a day of classes. "The capital moved, but somehow New York has always remained important."

Tied to the city, activity at Saqqara ebbed and flowed with the politics. Kings were buried elsewhere now, but the old royal burials still had the power to attract the faithful. Silverman has been studying the tombs of two Middle Kingdom priests of the cult of King Teti, long departed but still worshiped as a god.

From a file he extracts an inked cutaway view of the two mortuary complexes, which sit across the street from Teti's pyramid. But there's a twist. After plunging straight down,

STILL COMMANDING attention, a relief of Amenhotepi II, one of Egypt's most powerful queens, emerges with a final puff from Audran Labrousse. The 18th-dynasty schemer outlived her stepson and took the throne. She built herself a tomb fit for a king, discovered near other royal burials (tomb, at left) after 30 years of excavation.



the tomb shafts sneak under the street, putting the burials beneath Teti's own sacred space. The priests, it seems, were cozying up to the big man in the great beyond.

OTHER KINGS were not nearly so beloved. Officials of New Kingdom maverick Akhenaten may even have deliberately tried to keep their distance in the afterlife, and with good reason. Several years into his reign, in about 1348 B.C., Akhenaten banned worship of the traditional gods and formed a new religion around Aten, the sun disk. He also founded a new capital, Akhetaten (modern Amarna), in the desert far to the south of Saqqara. "He behaved like a maniac," says Maarten Raven, curator of the Egyptian collection in the Netherlands' National Museum of Antiquities. "It was a shock to his contemporaries."

Raven has recently uncovered the tomb of one contemporary, a high priest at the temple of Aten in Memphis. Edging into the desert south of the Step Pyramid, the complex includes a burial shaft set in a courtyard once forested with papyrus-shaped columns. Four barrel-vaulted mud-brick chapels mark the corners of the courtyard, and limestone reliefs decorate its walls.

The owner of the tomb was named Meryneith, or at least that's how he started out. In

LINEN AND [illegible] detail of a [illegible] but its [illegible] un- [illegible] names— [illegible] on the tomb walls. A tomb relief [illegible] the [illegible] skin of a [illegible] Is this [illegible] mummy? No one [illegible] sure.

HERE, ON THE SUNSET BANK OF
THE NILE, WAS AS CLOSE AS MORTAL REMAINS
COULD GET TO THE GREAT BEYOND.

what seems to have been a continuing scramble for political survival, Meryneith changed his name twice—first to Meryre, then back to Meryneith. His tomb, built in three stages over the course of his career, holds the proof.

In the oldest section, carved before Akhenaten's revolution, doorjambs to a chapel were inscribed with the official's original name. "Meryneith means 'beloved of the goddess Neith,'" Raven explains, tracing his index finger above the bracket of two hunting bows, tips crossed at each end, that symbolizes the deity.

The sign was altered, however, in the second building phase. A circle, the symbol of the sun, was carved over the bodies of the bows, and plaster was smoothed over their tips. "We can see here that he changed his name to Meryre, 'beloved of the sun,'" Raven says. "It looks as if Meryneith felt it would further his career to drop the reference to the old goddess and take a new name that was politically correct."

We move to a fragment of a wall relief that once depicted the tomb owner and his wife. All that remains of Meryneith is an arm, painted ruddy brown, but the hieroglyphs are clear—two bows, tips crossed, cleanly cut into the stone. "This was done during the third stage of decoration," Raven concludes. "Meryneith reverted to his old identity as a polytheist as soon as Akhenaten was dead."

Was Meryneith attempting another career move, distancing himself from the heretic king who was reviled in death? If so, he probably blew it. He never finished his tomb—maybe he couldn't escape his old connections and was booted out of this prime burial site.

The tomb next door was built by a man named Horemheb, who maneuvered successfully through the politics of Akhenaten's time. He ultimately became king, prepared a royal burial, and gave this gravesite to one of his wives. If Horemheb knew Meryneith, "What

MYSTERY SHROUDS the fate of M[illegible], a [illegible] 18th-dynasty politician. Unusually intimate, the seated statue of him and his wife, [illegible] by [illegible] texts (shown in mirror), was left in a tomb he never used. No one knows why. A contemporary, Horemheb, also built a tomb he didn't use (below left), but his fate is known: He became king and was buried in far grander style.

EGYPTIAN MUSEUM, CAIRO (RIGHT)

did he think of him—that he was a man without backbone?" muses Raven. "On the other hand, Horemheb was very quiet about what he did during the Akhenaten period."

Clues about the relationship between these two men may still lie hidden under the space that separates their mortuary complexes. Raven plans to dig there next spring.

Sorting through what he finds won't be easy, though. As with the rest of Saqqara this area is riddled with the burials of unknown officials and commoners from other eras, and looters have tunneled between the tomb shafts. "It's like Swiss cheese underground," says Raven. "That makes a very complex puzzle—but if it were straightforward it would be boring, wouldn't it?"

The long parade of Egyptian kings ended with Alexander the Great's conquest of 332 B.C. Foreign ways eroded the civilization that had risen to greatness along the Nile, but the monuments in the desert endured, and daily life continued much as it had for millennia.

Late one afternoon I climb the weathered stump of a mud-brick palace built in Memphis during the last years of native rule. From the top I look over the modern village of Mit Rahina, where wash hangs from the windows of two-story red-brick houses and children run laughing down streets of dirt. Farmers on donkeys start home from the surrounding fields, and herders walk their cattle in from distant pastures. Along the western horizon I see what the ancient Egyptians did—the pyramids of Abusir, Saqqara, Dahshur. Finally, just beside the Step Pyramid, the sun slips away to join Osiris for the night. □

**ON OUR WEBSITE**

Did commoners hope to live like kings in the hereafter? Find out at **nationalgeographic.com/ngm/0210**.

SECRETS OF SAQQARA

# A PHARAOH'S

EMERGING FROM THE SANDS OF SAQQARA, AN UNPRECEDENTED DISCOVERY—THE ROCK-CUT TOMB OF A TRUSTED ENVOY OF RAMSES THE GREAT—PUTS A FACE ON ANCIENT EGYPTIAN DIPLOMACY.

BY ALAIN ZIVIE
CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE, PARIS

PHOTOGRAPHS BY PATRICK CHAPUIS
HYPOGÉES

# PEACE MAKER

# SECRETS OF SAQQARA

I CAME HERE OFTEN, AND I DREAMED IN FRONT OF THE CLIFF. I IMAGINED THAT I WOULD SEE ALL THE TOMBS DISCOVERED ONE DAY.

## FORGOTTEN GRAVES

A crumbling limestone cliff marks the eastern edge of Saqqara (below). When I first came here in 1976, few imagined that the cliff might harbor the graves of important people. In the country, the local name for the site, Abwab al Qotat, means "doorways of the cats." As I began exploring, I saw firsthand the reason for its name. Thousands of mummified cat mummies had been buried in the cliffside catacombs. But surely there was more here than cats. Acting on this hunch, I kept digging—and have been doing so ever since. Supported by the French Ministry of Foreign Affairs and sponsors such as the National Geographic Society, I've excavated more than 20 cliff tombs, all dating from between about 1375 and 1250 B.C. Among my greatest finds was the tomb of Aper-El, prime minister to the pharaoh Akhenaten.

Recently my crew cleared rocks from a new opening and I ventured to enter (above). Inside I made another extraordinary discovery. This was the tomb of Netjerwymes, an envoy of Ramses the Great who brokered a peace treaty between the Egyptians and the Hittites, the two superpowers of his day.


## BURIED CLUES

Netjerwymes's [illegible] reflects [illegible] high status. Digging through more than six feet of sand in front of the cliff, we uncovered the remains of his mortuary chapel. This anteroom to his tomb once featured a pillared courtyard about 12 feet wide (above), but only the rear portion survives. Painted reliefs on the limestone pillars show Netjerwymes praying to the gods (1 and 2) and enacting a symbol of rebirth (3).

Inside the tomb we found [illegible] envoy's name inscribed on the walls, though its exact spelling remains unclear. That such a powerful man chose this spot for his tomb means Saqqara was still a coveted burial ground centuries after kings began to be interred elsewhere.

SECRETS OF SAQQARA

IT SEEMED HOPELESS—TOO MUCH DAMAGE, TOO DAMNFOOLISH IT HAD ALWAYS BEEN HERE.

**MOMENTOUS SURPRISE** Moving deeper into the tomb (below right), we removed debris added during the last centuries and finally glimpsed something stunning: the statue of a king beneath the head of a cow. The walls of the tomb, as fragile as dry clay, threatened to fall on us. Cautiously freeing the figures from stone blocks and debris (below), we finally saw the whole sculpture (left). Ramses, as a god, welcomes Tutankhamun to the afterlife; Hathor, the goddess of the dead appearing in the guise of a cow, promises resurrection. A shaft in front of the statue may lead to the tomb's burial chamber, as yet unopened. We hope it tells us more about the life of this distinguished man.

See more of Saqqara's sacred [illegible] and find resources about life and [illegible] in ancient Egypt at graphic.com/ngm/0210.

Step aside, Godzilla. Landfill, pollution, and relentless growth are the new conquerors of

# TOKY

# OBAY

BY TRACY DAHLBY

PHOTOGRAPHS BY MICHAEL YAMASHITA

**A human tsunami** waits to be drenched by machine-generated waves at a water park near Tokyo. Equally awash in a human tide, the Tokyo Bay shoreline swells with a megalopolis of 32 million people—a fourth of the entire nation—forming Japan's economic, political, and cultural core. Monstrous sprawl in that densely populated country is a smuggy fact of life behind actor Kenpachiro Satsuma (arrow), who once played the movie menace Godzilla.

**Dueling icons** dominate the [illegible] of Yokohama, where [illegible] as if to [illegible] Mount Fuji. A [illegible] an [illegible] a new [illegible] and [illegible] a [illegible] Ferris wheel. Work [illegible] feet the [illegible] in [illegible] 1990, one [illegible] the [illegible] "bubble [illegible]" began to [illegible]

**Life at the top** means an elegant Chiba penthouse for real estate executive Kazuo Kanatsuna and his wife, Kiyoi. Their generation practiced frugality. Today, says Kanatsuna, "young people live for the moment and have less desire to save for the future." He may be right: Personal savings rates have dropped ▬ Japan's 12-year recession drags on.

Locked in a tiny Ferris wheel gondola, whirling high above the steely waters of Tokyo Bay, I realized I'd made a mistake asking Godzilla along for the ride. "One swish of my tail," snarled the famous movie monster as he clawed the air, "and that bridge over there is toast!" Seeing as how "Godzilla," an actor named Kenpachiro Satsuma, had earned his living playing the terror of Tokyo Bay, trampling soundstage replicas in a rubber lizard suit, I'd expected an insider's insight into this body of water at the heart of Japan's biggest megalopolis.

But instead Kenpachiro grew strangely agitated as we revolved skyward, the bay's overbuilt shoreline fanning out before us like an unruly board game.

"Zzzzsssssttttttt!" he hissed, like the afterburner on a jet engine, his eyes eerily agleam. "This is Godzilla's exact line of sight," he declared as we hit the top of the giant Ferris wheel, which at 377 feet was only slightly higher than the mythical monster was tall.

"Hey, I smashed all those buildings down there in my last movie," he huffed, indignantly scanning the horizon. "What're they doing back there?"

Like many residents of the bay area, Kenpachiro was understandably disoriented. In recent years a construction boom has transformed the landscape, and now costly new ornaments—a glitzy hotel or world-class aquarium here, a convention center or two there—mingle with older and more familiar factories, smokestacks, and oil storage tanks. In fact, ever since Kenpachiro's predecessor, Godzilla number one, made his splash on the big screen back in 1954 by rampaging from these waters, the bay area has played the lead role in Japan's rise to stardom. Today its five main cities (Tokyo, Yokohama, Kawasaki, Funabashi, and Chiba) and four encompassing prefectures (Kanagawa, Saitama, Tokyo, and Chiba) anchor the planet's number two economy, after the United States. The center, as the Japanese call Tokyo, and its satellite cities account for nearly a quarter of the country's 127 million people and a third of its wealth, dominating its politics, arts, commerce, and communications.

Throughout Japan's steep, brilliant climb from the devastation of World War II, the bay worked like a powerful magnet, pulling in millions of people from around the country, providing them new jobs and new lifestyles. Many of those living within the bay's ambit came to view it as their personal field of dreams. Thirty years ago Kenpachiro came here chasing his dream of becoming an actor but wound up working in one of the area's steel mills, jockeying around molten buckets of iron in front of a blazing blast furnace. His big break came when he got a call to try out for Godzilla.

"The director needed somebody who could work in that hot rubber suit without passing out," Kenpachiro confided.

But as Godzilla and I spun through the silvery air above the waterfront, old dreams were under siege. Japan's deepest postwar economic slump, now a dozen years old, had left the bay area awash in a rising tide of bad debt, busted companies, and lost jobs. Even Godzilla was out of work. Nowadays movie monsters are computer-generated products of special effects studios. "I hate that," Kenpachiro growled.

Godzilla wasn't the first mover and shaker to run riot on the shores of Tokyo Bay. Thrust like a boxing glove into Japan's midsection, the bay has for four centuries been the arena for one of the longest running bouts of creative

# THE BIG FILL

Bite by bite, the bay has shrunk to feed Japan's hunger for its rarest commodity: space. Reclamation began four centuries ago when areas near the Edo Castle —site of today's Imperial Palace— were filled to serve the court. In modern times industrialization has overtaken wide swaths of wetlands at the expense of a once flourishing fishing industry.

Land reclamation
16th–18th centuries
1900–1955
1956–1975
1976–present
Proposed

0 mi 4
0 km 4

[illegible] BY SHASHIN KAGAKU [illegible] LTD.; [illegible] REGIONAL BUREAU, MINISTRY OF LAND, [illegible], AND TRANSPORT

NATIONAL GEOGRAPHIC MAPS

Imperial Palace
Sumida River
TOKYO
Tokyo International Airport
CHIBA
TOKYO BAY
KAWASAKI
Aqua-Line bridge/tunnel
YOKOHAMA
KISARAZU
JAPAN
Yokosuka Naval Base (U.S.)
Cape Futtsu
YOKOSUKA
Cape Kannon

destruction in the annals of civil engineering. Shogun Tokugawa Ieyasu rang the starting bell in 1603 when he declared Edo (today's Tokyo) his seat of power. During its reign of more than two and a half centuries, the Tokugawa family ordered marshes filled, rivers dredged, and canals built as Edo became the capital of a feudal society closed to outsiders.

By 1853, the year U.S. Commodore Matthew Perry parked his warships off the bay and insisted the Tokugawas open the country for trade, Edo was one of the largest cities on Earth and already expanding into the bay. A century later, as Japanese seeking a fresh start in the aftermath of World War II flocked to the bay's cities, the pace of land reclamation soared. (Dredging and filling has buried fully one-fifth of the bay's surface area, much of it since 1950.) On this reclaimed land rose a vast industrial maze that soon furnished the world with cameras, steel, cars, and computers.

That was the hopeful, hardworking, upwardly mobile place I discovered when I went to live near the bay 30 years ago, first as a student of Japanese and later as a newsman. But I was in for a surprise when I returned last year. In the month I spent traveling from hilly Cape Kannon at the bay's western approach around and through the urban sprawl of Yokohama and Tokyo and on to Cape Futtsu at the rural eastern extremity, the place appeared more outwardly affluent and active than ever. Yet I'd never seen the bay's citizenry more perplexed or edgy, as if the people at Japan's center had at least momentarily lost their bearings.

"I'm angry!" a retired stockbroker told me, recounting how the prestigious brokerage firm where he had worked for 39 years had crashed, taking his pension with it. Now he was stocking shelves at a convenience store and struggling to pay the mortgage on the retirement home of his dreams—a luxury condominium overlooking Tokyo Bay.

Other bay residents are casualties of a different crisis, one brought on by decades of environmental abuse. "My family has fished here for 300 years," Kazutoshi Ohno said wistfully the morning I visited his home near the port of Funabashi. "But now there are fewer and fewer fish. I used to catch 1,600 tons of sardines a year. Last year it was 200."

In Japan's rush to supercharge its economy, 90 percent of the bay's natural shoreline was buried under fill. Innumerable acres of wetlands, which serve as natural pollution filters, fell to the dredge and the bulldozer. Tighter government regulations have produced cleaner water in recent decades, but key fisheries have vanished. "I worry every day how much longer my son's generation can continue fishing," Ohno lamented.

Despite all the flashy new construction the bay had become a breeding ground of disillusionment. "Look at Tokyo Bay, especially at night, and it looks exactly like New York City," said novelist Koji Suzuki, whose macabre best-seller, *The Ring*, is set against the backdrop of the bay. "After the war, becoming like New York was our vision of the future. But now that we've reached the future, are we satisfied? It doesn't feel like it."

The bay's new crosscurrents were evident the wet gray morning I set foot on Odaiba, a jot of reclaimed land within sight of downtown Tokyo. A crisp wind skated off the choppy

**Years of lavish government spending on public works have saddled Japan with the industrialized world's biggest national debt.**

waters as I stood watching young couples stroll a vast boardwalk encircling two multistoried shopping malls replete with multiplex theaters, sports boutiques, and a food court worthy of Minnesota's Mall of America.

In the dozen years I'd lived in the bay area, this 1,110-acre island had been an empire of weeds and warehouses known as Landfill Number 13. But Japan's boom times of the late 1980s—the infamous "bubble economy"—set the stage for the transformation of Odaiba into an outpost of ultramodern office buildings, lofty condos, and sleek techno-pop amusement centers. There's even a waterfront replica of the Statue of Liberty.

"Odaiba is a symbol of metamorphosis," said Machi Tawara, a best-selling poet who has written of the island's allure for Japan's young and restless in search of freer lifestyles.

Workers teeter and toil on a giant gamble: the Yokohama convention center (top). While vacancy rates are high in some areas, falling land prices and government subsidies are fueling a construction boom. Traditional labor suits Kiichi Takiguchi (above), who collects and dries seaweed for sushi. But his work has gotten tougher: Landfill has moved the waterfront farther away.

**The price of progress** clouds the air and fouls the water in Kawasaki, where smokestack industries crowd a drab man-made archipelago. The city plans to paint factories in rainbow hues to relieve monotony and seeks to create zero-emission industries. But landfill areas are expected to expand, further hindering the water flow needed to cleanse the bay.

But Odaiba strikes many people as so relentlessly commercial that its live-in community has so far lured fewer than 5,000 residents—far below capacity.

"My next-door neighbors have changed three times," said Mari Ishii, who has lived on the island since 1996. Mari, a 50-year-old fashion stylist, stood next to me on the narrow balcony of her 29th-floor apartment as we surveyed Tokyo's looming skyline. "Young housewives particularly feel cut off here."

But not Mari—she loves it. Here on Odaiba she's close enough to the great city's heart to feel its pulse but distant enough to escape its sardine-tin overcrowding. "Everything is fake, of course," she said—including the man-made beach on the artificial cove just down the street. Yet that beach offers a retreat where Mari can have her morning coffee and quietly read the newspaper. And best of all, she said, "No noisy garbage trucks!"

Odaiba's tower dwellers drop their refuse down a chute, Mari explained, and a cushion of air shoots it through underground tubes to a recycling plant. That made me envious, since my Manhattan neighborhood still wakes to the clatter of predawn garbage collection. But how could such an elaborate setup make economic sense for this small community?

"Officials spend taxpayers' money and think about how to use the facilities later," Mari said, echoing a popular sentiment. To prove her point she led me to the nearby Ariake Sports Center, a great concrete behemoth with two vast swimming pools heated with energy produced by the recycling plant next door. The few people swimming there looked like guppies in a hot tub.

Rampant construction has put Tokyo Bay center stage in one of Japan's touchiest political dramas. Years of lavish government spending on public works have failed to revive the economy and saddled Japan with the industrialized world's biggest national debt. Much of the outlay was pork-barrel spending that reinforced what wags call government by construction, cozy ties between the Liberal Democrats—the conservative (despite their name) politicians who run the country—and powerful construction bosses who finance political campaigns.

Such arrangements help explain why two huge convention centers—Makuhari Messe in Chiba Prefecture and the Tokyo Big Site—stand less than 20 miles apart. "They're competing with one another," Shintaro Ishihara, Tokyo's outspoken governor, told me the afternoon I called on him at city hall. As part of its economic stimulus strategy, the national government doled out trillions of yen to localities with little thought about costly redundancies. But even Ishihara, a Liberal Democrat turned independent who rode into office in 1999 on a populist pledge to end such boondoggles, has been frustrated in his efforts to stop them.

Ishihara, who has been touted as a possible future prime minister, dreams of linking the cities around the bay into a giant computerized megalopolis that would be "the most efficient city on Earth." But that won't happen, he suggested, unless old barriers of patronage and feudal bickering are overcome.

Politicians aren't the only ones to blame for creating the bay's construction monster. Yoshio Taniguchi, an internationally acclaimed architect, observed that ordinary Japanese, once famous for their frugality, had been conditioned by the sudden speculative wealth churned up in the 1980s to prize "lots of stuff" over quality or aesthetics. "So much money has been thrown into the gutter," said Taniguchi, who confessed to a Godzilla-like impulse to "push everything into the bay and fill it in."

**"Passersby give us dirty looks," he said, but homelessness had taught him to live without fear of not fitting into Japan's conformist society.**

Filling it in is precisely what Kisho Kurokawa, another prominent Tokyo architect, has proposed. Aimed at ending haphazard shoreline reclamation and improving the bay's aquatic health, his New Tokyo Plan 2025 is genuinely earthshaking: It calls for scooping up the polluted muck that lines the seabed and using it to create a huge central island covering as much as a third of the bay's surface area. Theoretically the massive structure would also ease Tokyo's population jam by providing living space for up to a third of the city's 12 million

Seductive shelves piled with goods lure shoppers to ■ Costco outlet in Chiba, where the firm hopes to popularize deep-discount, bulk-purchase retailing. Discounts can't help the casualties of Japan's bust: growing ranks of homeless, who arrange their meager belongings on bayside walkways. Japan's official unemployment level tops 5 percent, but may be much higher.

people. "The average citizen," Kurokawa says as part of his promotional pitch, could have "a house—with a yacht harbor attached."

Critics dismiss Kurokawa's grand vision for the wholesale disruption it would bring, to say nothing of its estimated 620-billion-dollar price tag (in today's dollars that's almost twice what the U.S. spent to build its Interstate Highway System). But the architect was unfazed the afternoon I visited him at his Tokyo office. A fastidious man with a Parisian flair, he argued that the government's failure to make comprehensive plans meant somebody had to stir debate on the future of Japan's key waterway.

"The bay is nearly dead here," he said, dragging his pen across a map, pausing dramatically at its northern edge. Over the years runoff and raw sewage gummed the seabed with excessive amounts of nitrogen and phosphorus, causing fish-killing red tides. The problem is compounded by river-strangling dams that stifle the flow of fresh water into the bay, and by the bay's relatively narrow mouth, which further restricts water flow. Kurokawa's plan would not only create a giant island in the bay but also increase water circulation by blasting a huge canal through the neck of the Boso Peninsula to the Pacific Ocean. Staring at me confidently through tortoiseshell glasses, Kurokawa declared, "I will save the environment."

Leading environmentalists hotly disagree, arguing that such massively engineered solutions smack of the same postwar hubris that brought on the bay's ecological woes. When I raised Kurokawa's plan with Toshio Furota, a marine biologist at Toho University in Chiba, the genial professor raised his fists and said, "I'm ready to fight!"

FEW PROJECTS have dredged up more controversy than the Aqua-line, a tunnel-bridge complex that dives into a shaft 200 feet beneath the sea at Kawasaki, 11 miles south of Tokyo, then surfaces serpent-like in mid-bay to finish the ten-mile crossing in a leap of steel and concrete. When it opened in 1997, the structure fulfilled a decades-old dream of linking the populous Tokyo-Yokohama side with the less developed eastern shore. Since then, however, the Aqua-line's whopping round-trip toll—reduced last year from $70 to $50—has kept drivers at bay.

It didn't take long to see that something was wrong the hazy spring morning I drove down from Tokyo and slipped into the tunnel. It was rush hour, but there wasn't another car in sight. The long curving barrel, its acres of ceramic tile bathed in greenish light, reminded me of a very large haunted bathroom.

"Here comes one now!" said my guide, Tsuneyoshi Funazaki, a little too eagerly, as we watched a lone passenger car zip by. Funazaki, a likable, decorous man in a natty glen-plaid suit, had served as the project's senior engineer. He acknowledged a problem with the hefty toll, required to repay huge construction costs. But with hundreds of thousands of cars overloading the bay area's highways, "We built the Aqua-line for the long term," said Funazaki firmly. "It will ease traffic congestion."

While that remains to be seen, there is no denying the structure's engineering genius. Funazaki drove me out to the middle of the bay, where a complex of shops and restaurants resembling an ocean liner marks the junction between tunnel and bridge. "I used to get seasick out here," he said with a wan smile, remembering times when the wind kicked up so hard the bridge span bucked like a ship in heavy seas. To even out the stress, Funazaki and his men devised a machine called a tuned mass damper, which looks like a giant shock absorber. Sixteen of the devices were installed along the bridge to cancel out the vibrations.

The economic shock waves rocking Japan today haven't been so easy to calm. Walk the promenade along Tokyo's Sumida River, as I did one sunny Sunday, and you'll see one of their most startling effects. Near the coffee-colored river's confluence with the bay, I spied dozens of men and women, some of Tokyo's 6,000 homeless, scuttling in and out of neat, boxlike structures. Squatter's camps were all but invisible when I lived in Tokyo, so I stopped and asked a muscular, well-spoken man what had landed him here.

"I lost my job in a metal pressing plant," said Sadao Yamashita, 38, offering me his only chair. When rent money ran out, he'd built his box—roughly eight feet long and five feet high—from scraps scavenged at building sites. Inside there was an alarm clock, a cassette tape player, and neat piles of clothing.

"My father worked for the same company for 35 years," said Yamashita, but Japan's vaunted "permanent employment" system had failed

**A Titanic** of political myths, the Long Island Arthur Kill Bridge and Tunnel, completed in 1997, promised the first crown-to-crown route. Anchored by a ship-shaped shopping complex in center, the project effectively sank on its maiden voyage. Few commuters can cough up the $50 toll, leaving lanes as stark as the tunnel's air vent, which arcs upward like an iceberg.

# Sea Power for Peace

In the wake of the cataclysmic bombings of Hiroshima and Nagasaki that ended World War II, Japan vowed to "forever renounce war ... as a means of settling international disputes." In the words of its postwar constitution. But the constitution does not preclude Japan from being prepared to respond to direct military attack. Crewmembers taking their morning exercises (bottom right) are part of the country's potent Self-Defense Forces, or SDF. Officers on the destroyer *Hatsuyuki* (far right) train their eyes on other destroyers (right) as the ships conduct maneuvers near a base at Yokosuka on Tokyo Bay—the same bay where Japan surrendered to the Allies in 1945.

Now a new world order is forcing Japan to rethink the volatile issue of war and decide how and when to use its considerable power. During the Persian Gulf war of 1991, Japan sent minesweepers and a medical group to the gulf, but was criticized in the United States for its stinginess in helping pay for the international conflict. Perhaps to avoid such criticism in the aftermath of the September 11 attacks in the U.S., the Japanese legislature swiftly passed laws enabling the SDF to lend non-combat support to the U.S.-led global anti-terrorism campaign. And the SDF may now use arms to protect U.S. military facilities in Japan.

people like him. Still, Yamashita felt lucky. Though homeless for now, he had just landed work at an express delivery company for 175,000 yen (about $1,400) a month, not plush in high-priced Japan but enough to get by on.

Prosperous bay residents had complained to me how their luxury condos had cratered in value since the slump began, but Yamashita wasn't bitter. "Passersby give us dirty looks," he said, but homelessness had taught him to live without fear of not fitting into Japan's conformist society.

"In Japan," he said, "it's always been one rule after another. But here I can be my own man."

TODAY THE URGE for greater social freedom rivals the bulldozer in shaping life on the bay. This impulse was on display the morning I visited Venus Fort, one of Tokyo's ubiquitous waterfront malls. Billed as a "theme park for ladies," its main concourse resembled an antiseptic Italy, whose upscale shops attract a new species of bay dweller—the *parasaito shinguru*, or parasite single. Mostly young women in their twenties and thirties, they generally live with their parents and seem intent on liberating themselves through conspicuous consumption.

"Is it getting dark in here?" I asked my appointed guide, Tamami Yamanaka, a young single with chic auburn hair. "Yes," she replied. "People buy more in the late afternoon," so a computer-driven "sky" in the high vaulted ceiling produces a new sunset every two hours. I was intrigued. Had sales data confirmed the sundown buying theory? "No," said Yamanaka, smiling. "I think the owner"—a man—"just heard it someplace."

Personally, Yamanaka thought Venus Fort's popularity stemmed from a potent shift in gender roles. For centuries survival in Japan's male bastion forced most women to focus on attracting a mate, but bad economic times cut deeply into the perks and power of the country's corporate samurai. As young women take up the slack, getting more and better paying jobs (though at salaries comparably lower than males), they are postponing marriage and rethinking their options.

"We women don't expect much from men today," Yamanaka said matter-of-factly. "But we do want to better ourselves." We had paused near a boutique called Accessory Creation Mix. Inside, customers pressed the counter, ordering cosmetics tailored to their skin's precise complexion. Did today's freer spirit connect with bigger ideas of feminism and equality? I asked. That might come later, said Yamanaka, but for now women were enjoying the gender jujitsu. "Men are good for taking you out to dinner," she said, "but in the future women will make the decisions."

That's already happening across the bay in Chiba, where Akiko Domoto, the prefecture's first woman governor, put the local old-boy political network on notice by ordering a halt to all further building at Sanbanze, one of the bay's few surviving wetlands. She's determined to give Chiba a badly needed makeover.

"Tokyo is the capital, but it doesn't have to be the center of everything," she said late one evening when I caught up with her at her satellite office in Tokyo. Years of well-documented political corruption had reinforced Chiba's image as a seedy area of smokestacks and rice

**"Becoming like New York was our vision of the future. But now that we've reached the future, are we satisfied? It doesn't feel like it."**

fields whose six million citizens were ridiculed by snooty Tokyoites (often concealing their own Chiba origins) as irredeemable rustics.

Domoto, a 70-year-old former TV journalist, said she owed her surprise victory in 2001 to housewives and younger voters who were fed up with Chiba's underdog status and wanted to see action on neglected issues such as the environment and education. "The people of Chiba are shouting for change," she insisted.

To test the decibel level I took to the road for a hitchhiking tour of Chiba's coastline, as I've done in other parts of Japan whenever I've wanted to hear what ordinary citizens have to say. Thus one brisk May morning I stood on the shoulder of Highway 16 near where the Aqua-line bridge steps down on the eastern shore, marveling at the area's transformation.

Twenty years ago this part of the prefecture

Infatuation with Americana rises to obvious extremes near Odaiba (top), where a Statue of Liberty replica stands tall before the Rainbow Bridge—so named for its changing colored lights. On the waters below the bridge the essence of Japan still reigns aboard *yakatabune,* or sightseeing dinner boats, where diners indulge traditional tastes with ample sushi and sake.


M-I-C-K-E-Y and his mate charm a beaming bride and her bashful groom, wed at Tokyo Disneyland. Japan's long post-war occupation by U.S. troops helped give rise to a deep affinity for American pop culture, which has made this Disney export the world's most visited theme park.

had been as developmentally remote from Tokyo as rural Iowa is from New York City. Now it was peppered with video stores, pizza restaurants, tire dealerships, and places with fancy names like Pâtisserie à Chiba. Having spent the night in a dusty, mite-ridden inn, I was having mixed feelings about the progress of civilization here when a minivan rolled to a stop.

"Need a lift?" said the driver, Yoko Maru, an effervescent woman in her forties. Squeezing into the car, I complimented her on how lively Chiba had become. "Are you kidding me?" said Maru, who grew up on the citified Chiba-Tokyo border. "Before we married, my husband said this was such a great place, but he lied," she said with a chuckle. "Everything moves so slowly."

What about the new strip malls along the highway? Maru admitted the area's burgeoning consumer culture makes life brighter and more convenient. But people here worry about waves of drug abuse, school bullying, teenage prostitution and suicide now sloshing into Chiba from Tokyo. Yet despite the arrival of these and other modern ills, Maru felt most residents are still behind the times.

"This place is in a time warp," she said. "I want to go to New York!"

MARU DEPOSITED ME at Cape Futtsu, which marks the bay's eastern approach. From there I could see all the way across the water to a clutch of low white buildings on the western shore—the U.S. Navy base at Yokosuka, home of the Seventh Fleet. Two days later, tired of roughing it, I hired a van and an affable young driver named Munetaka Yaginuma.

Hurtling up the coastline back toward Odaiba, the artificial island where I'd started my journey, I spied a long seawall covered in graffiti. Surprised by its antiestablishment tone, I mused how for years bay residents had prided themselves on inhabiting the cleanest, safest, urban enclave on Earth. Shocked by a recent surge in street crime, however, many lay blame on today's more self-centered youth.

"Young people are spoiled," said Yaginuma, himself only 28. But in his view the root of the problem goes deeper than that. When his father grew up in the 1950s, the drive to rebuild their devastated country had infused people with a keen sense of national purpose. You went to work for a big company, adopted its values, and in return you were guaranteed a job, often for life. But hard economic times have changed the social contract, leaving many Japanese to fend for themselves.

You can see the result in the growing number of young people around the bay who take part-time jobs—some out of economic necessity but others as an act of personal liberation from Japan's rigid pecking order. They call themselves freeters, slang for freelancers, and Yaginuma is a prime example. He wants to be a professional sportfisherman or writer, he isn't sure which. To make ends meet he delivers mannequins to bay area department stores for $150 a day—a radical departure from the traditional career track taken by his father.

"He gave me hell for wasting my life," said Yaginuma, a prep school and college graduate, as he ran his hand through his dyed blond hair. "Then Dad's company went bust." The elder Yaginuma was forced to take a job driving a Tokyo taxicab. "Now he says he knows exactly how I feel."

Yaginuma and I sped around a curve of Tokyo's elevated expressway, and the big Ferris wheel on Odaiba hove into view. In the middle distance cargo ships and tugboats etched furrows in the bay, while behind them the glass-and-steel spires of East Asia's richest city rose into a brilliant sky. I was buoyed by the energy of the place but also felt the strain of people coping with wrenching change.

To lighten my mood, I slipped inside one of the island's futuristic amusement centers and watched as Yaginuma attacked one of its video games. Suddenly the screen blinked and froze. "I've been had!" he cried good-naturedly.

It was one of life's casual glitches, but it reminded me that Yaginuma's generation faces a less predictable game than older Japanese. I felt reasonably sure that today's young strivers could adapt and prosper, but would Japan's entrenched leadership rise to the challenge? No one I had asked could answer that question. All that seemed certain at this uncertain moment for Japan was that whatever shape the future took, its contours would emerge here first, along the shores of Tokyo Bay. □

**MORE ON OUR WEBSITE**

Indoor surfing, avant-garde architecture, and other surprises from the shores of Tokyo Bay await at **nationalgeographic.com/ngm/0210.**

**Mosh-pit mentality** overtakes
[illegible] annual festa
[illegible] whistling, and
[illegible] had shrines through
[illegible] bestow b[illegible] that
[illegible] welcome than ever

THE

AFGHANISTAN
ARCHAEOLOGICAL
JAM
ALBANIA
BUTRINT
ALGERIA
OF BENI HAMMAD
TASSILI-N
M'ZAB
OJEMILA
TIPASA
S
GL
AZU
CUEVA
ANTONIOS
PENÍNSULA VALDÉS
JESUIT BLOCK AND ESTANCIAS OF CÓRDOBA
NATURAL PARKS
ARGENTINA AND BRAZIL
JESUIT MISSIONS OF THE GUARANI:
SAN IGNACIO MINI, SANTA ANA, NUESTRA
SEÑORA DE LORETO, AND SANTA MARIA
MAYOR (ARGENTINA), RUINS OF SÃO
MIGUEL DAS MISSÕES (BRAZIL)
ARMENIA
MONASTERIES OF HAGHPAT AND SANAHIN
MONASTERY OF GEGHARD AND THE
UPPER AZAT VALLEY
CATHEDRAL AND CHURCHES OF
ECHMIATSIN AND THE ARCHAEOLOGICAL
SITE OF ZVARTNOTS
AUSTRALIA
REEF
GION
NESS
RAINFOREST RESERVES
SHARK BAY
FRASER
AUSTRALIAN
HEARD AND
MACQUARIE
BLUE
HISTORIC CENTER OF
DENS OF SCHÖNBRUNN
CULTURAL
SCAPE OF HALLSTATT
DACHSTEIN SALZKAMMERGUT
SEMMERING RAILWAY
HISTORIC CENTER OF
WACHAU CULTURAL LANDSCAPE
VIENNA

Thirty years and 730 sites later the World Heritage

# Saving

# LUANG PRABANG

Taking their surroundings in stride, local boys flash past the gold walls of Wat Mai, an 18th-century temple adorned with scenes from the life of Buddha. The World Heritage designation covers the entire town of Luang Prabang, a former royal capital with structures deemed worthy of global celebration and protection.

## PROFILE

YEAR
Cultural
REASON: preserved
In

By Tom O'Neill
NATIONAL SENIOR

program keeps passionate track of Earth's lasting treasures.

# Places

AUSTRIA AND HUNGARY
CULTURAL LANDSCAPE OF
FERTŐ/NEUSIEDLER
AZERBAIJAN
WALLED CITY OF BAKU
BANGLADESH
HISTORIC MOSQUE CITY OF BAGERHAT
RUINS OF THE BUDDHIST VIHARA
AT PAHARPUR
THE SUNDARBANS
BELARUS
MIR
COMPLEX
BELARUS AND POLAND
BELOVEZHSKAYA PUSHCHA/BIALOWIEŻA
FOREST
BELGIUM
FLEMISH BÉGUINAGES
THE FOUR LIFTS ON THE CANAL DU CENTRE
AND THEIR
, LA LOUVIÈRE
LE ROEULX (HAINALT)
GRAND-PLACE, BRUSSELS
BELFRIES OF FLANDERS AND WALLONIA
HISTORIC CENTER OF BRUGGE
MAJOR TOWN HOUSES OF THE ARCHITECT
VICTOR HORTA, BRUSSELS
NEOLITHIC FLINT MINES AT SPIENNES (MONS)
NOTRE-DAME CATHEDRAL IN TOURNAI
BELIZE
BELIZE BARRIER REEF RESERVE
BENIN
ROYAL PALACES
ABOMEY
BOLIVIA
CITY OF POTOSÍ
JESUIT MISSIONS OF THE CHIQUITOS
HISTORIC CITY OF SUCRE
FUERTE DE SAMAIPATA
NOEL KEMPFF MERCADO NATIONAL PARK
TIWANAKU
BOTSWANA
TSODILO
BRAZIL
HISTORIC TOWN OF OURO PRÊTO
HISTORIC CENTER OF OLINDA
HISTORIC
DE BAHIA
SANCTUARY OF BOM JESUS
DO CONGONHAS
NATIONAL PARK
BRASÍLIA
SERRA DA CAPIVARA NATIONAL PARK
HISTORIC CENTER OF SÃO LUÍS
HISTORIC CENTER OF DIAMANTINA
DISCOVERY
ATLANTIC
RESERVES
ATLANTIC FOREST SOUTHEAST RESERVES
PANTANAL CONSERVATION AREA
JAÚ NATIONAL PARK
DOS VEADEIROS AND EMAS
NATIONAL PARKS
FERNANDO DE NORONHA AND ATOL DAS
ROCAS RESERVES
CENTER OF GOIÁS
BULGARIA
BOYANA
MADARA RIDER
CHURCHES
IVANOVO
THRACIAN TOMB
KAZANLUK
ANCIENT CITY OF NESEBUR
SREBARNA NATURE
PIRIN NATIONAL PARK
RILA MONASTERY
THRACIAN TOMB OF SVESHTARI
CAMBODIA
ANGKOR
CAMEROON
DJA FAUNAL

1. HAZIRANDA INDIA

2. ISLAND OF GORÉE SENEGAL

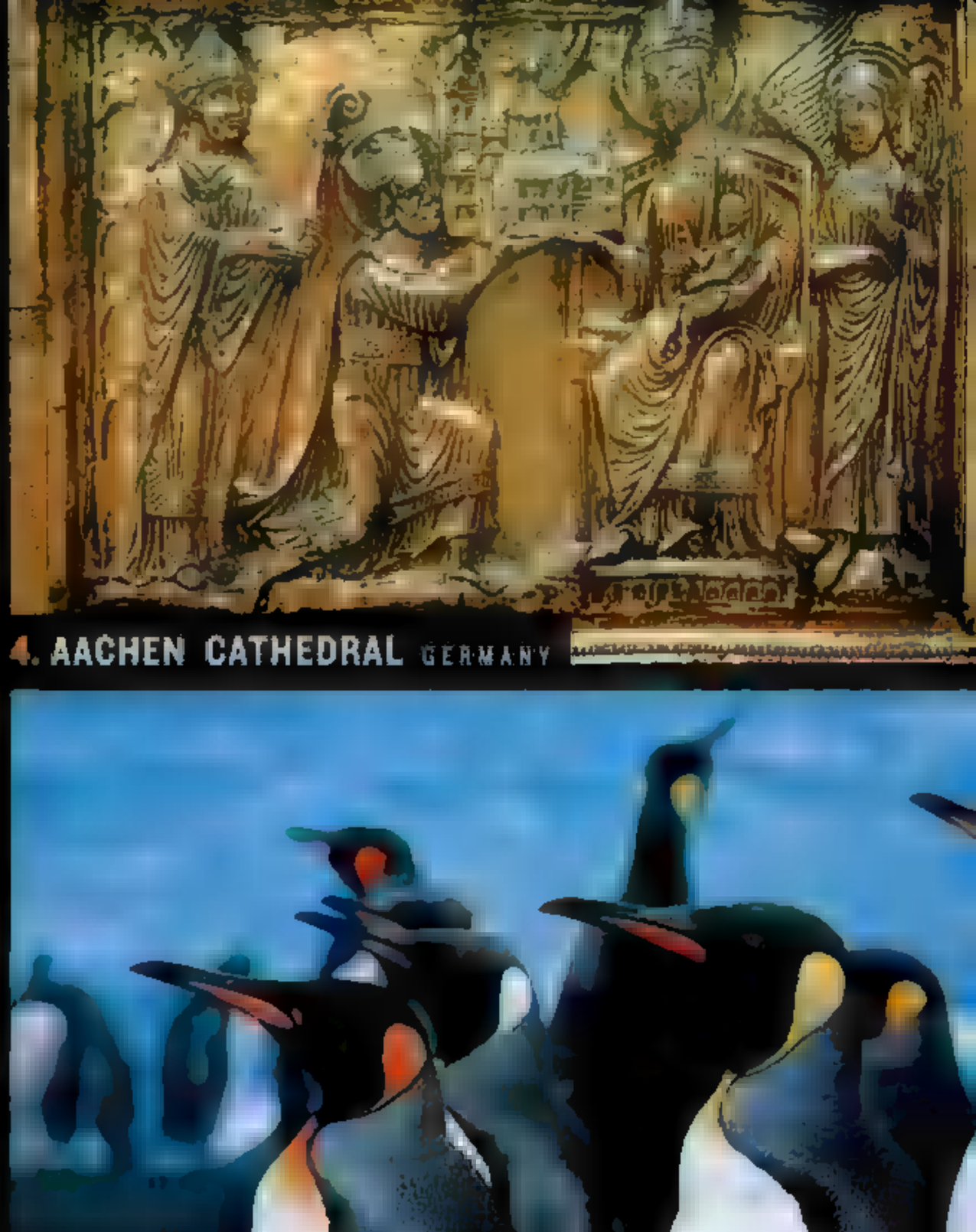
# Best of the best:

That's the lofty standard for making the World Heritage List. Nations lobby hard to get their glorious buildings, wilderness, and historic ruins on the list, a stamp of approval that brings prestige, tourist income, public awareness, and, most important, a commitment to save the irreplaceable.

In November 1972 the United Nations Educational, Scientific and Cultural Organization (UNESCO) inaugurated the list by adopting a treaty known as the World Heritage Convention. Its continuing goal is to recruit the world community in identifying cultural and natural properties of "outstanding universal value."

UNESCO officials do not see the list as a mere trophy

3. TASSILI-N-AJJER ALGERIA



4. AACHEN CATHEDRAL GERMANY

5. HEARD ISLAND AUSTRALIA

1. A rare wilderness in northern India, Kaziranga National Park (listed in 1985) protects the largest remnant population of Indian rhinoceroses. 2. Dungeon-like slave quarters remind visitors of a dark history when ships hauled human cargo from the Island of Gorée (1978). 3. Deep in the Sahara desert, cave paintings in Tassili-n-Ajjer National Park (1982) show humans and animals from a wetter time. 4. Emperor Charlemagne kneels before the Virgin Mary on a gold panel at Aachen Cathedral (1978), site of his tomb. 5. King penguins thrive in the pristine ecosystem of Heard Island (1997) in the southern Indian Ocean.

[illegible], [illegible] LIBRARY (TOP LEFT), GORDON GAHAN (BOTTOM LEFT), THOMAS J. ABERCROMBIE (CENTER), [illegible] MUNCHOW (TOP RIGHT), [illegible] PETERSEN [illegible] RIGHT)

case of superlative places. World Heritage status commits the home nation to protect the designated location. And if a site—through natural disaster, war, pollution, or lack of funds—begins to lose its value, nations that have signed the treaty must assist, if possible, in emergency aid campaigns. To date 172 of the world's 192 nations have signed the treaty.

The World Heritage program has scored high-profile successes. It exerted pressure to halt a highway near Egypt's Giza Pyramids, block a salt mine at a gray whale nursery in Mexico, and cancel a dam proposal above Africa's Victoria Falls. Its funds, provided by dues from the treaty's signers, have hired park rangers, bought parkland, built visitor centers, and restored temples.

It relies on persuasive powers more than legal threats, but at age 30 the World Heritage initiative has quietly become a force for appreciating and safeguarding the world's special places.

**MORE ON OUR WEBSITE**

Find more World Heritage images and links and resources selected by our Research Division at **nationalgeographic.com/ngm/0210**.

# THE GLOBAL A-LIST

Nominations can come from any nation that has signed the World Heritage treaty. Submissions must include a plan for managing and protecting the site. After receiving independent evaluations, the World Heritage Committee at its annual meeting chooses worthy sites.

*Photo locations in this article are labeled ■ this*

CANADA
AUX MEADOWS NATIONAL HISTORIC SITE
NAHANNI NATIONAL PARK RESERVE
DINOSAUR PROVINCIAL PARK
SGAANG GWAII (KUNGHIT ISLAND)
HEAD-SMASHED-IN BUFFALO JUMP
WOOD BUFFALO NATIONAL PARK
CANADIAN PARKS
DISTRICT OF QUEBEC
GROS MORNE NATIONAL PARK
OLD TOWN LUNENBURG
MIGUASHA PARK
CANADA AND THE UNITED STATES
KLUANE/WRANGELL-ST. ELIAS/GLACIER
WATERTON-GLACIER INTERNATIONAL PEACE PARK
CENTRAL AFRICAN REPUBLIC
NATIONAL PARK
CHILE
RAPA NUI NATIONAL PARK
OF
CHINA
THE GREAT WALL
MOUNT TAISHAN
IMPERIAL PALACE OF THE AND
MOGAO CAVES
MAUSOLEUM OF THE FIRST QIN EMPEROR
PEKING MAN AT
MOUNT HUANGSHAN
JIUZHAIGOU AND HISTORIC INTEREST
HUANGLONG SCENIC AND HISTORIC INTEREST AREA
WULINGYUAN AND INTEREST AREA
MOUNTAIN RESORT AND OUTLYING
TEMPLE AND CEMETERY OF AND THE KONG FAMILY IN QUFU
ANCIENT BUILDING IN THE WUDANG
THE PALACE, LHASA
LUSHAN NATIONAL PARK
MOUNT SCENIC INCLUDING LESHAN GIANT AREA
OLD TOWN OF LIJIANG
ANCIENT CITY OF PING YAO
CLASSICAL GARDENS OF SUZHOU
PALACE,
HEAVEN, BEIJING
MOUNT WUYI
DAZU ROCK CARVINGS
MOUNT QINGCHENG AND THE DUJIANGYAN IRRIGATION
ANCIENT VILLAGES IN SOUTHERN XIDI HONGCUN
LONGMEN GROTTOES
TOMBS OF MING AND QING DYNASTIES
YUNGANG GROTTOES
COLOMBIA
PORT, FORTRESSES, AND GROUP OF MONUMENTS
LOS KATIOS NATIONAL PARK
HISTORIC CENTER OF MOMPOX
NATIONAL
TIERRADENTRO
SAN AGUSTÍN ARCHAEOLOGICAL PARK
COCOS NATIONAL PARK




METEORA, GREECE

## EUROPE

289 | 23 | 6 | 3

castles, and ruins, toric city centers for density of Recent selections modern sites like the Essen coal Germany and cultural landscapes such as the wine country of



ALBERTA, CANADA

## NORTH AMERICA

3

Canada and with fossils, and geysers, dominate continent's listings. Mexico most cultural spots with its wealth of

LEON
AMERICA); KENNETH GARRETT (SOUTH AMERICA); FRANZ IMAGEBANK
BRYAN AND (AUSTRALIA); KATE (ASIA)
NATIONAL GEOGRAPHIC



TIWANAKU, BOLIVIA

## SOUTH AMERICA

2

Strong in sites, is short on forest reserves. National taken off the list after the of an road

# SITE CATEGORIES

**CULTURAL**

**15 IN DANGER**

Masterpiece buildings, such as the Versailles palace and the Taj Mahal, and monuments from civilizations, the Great Wall and Stonehenge, make the list. Selections also commemorate events with

**NATURAL 144**

**18 IN DANGER**

Swiss landscapes, the Great Barrier Reef—they qualify for sheer beauty. Natural sites also showcase geologic wonders. Grand Canyon is an example—and habitats that protect species and conserve biodiversity, such as Africa's Serengeti Plain.

**MIXED 23**

**6 IN DANGER**

Mixed sites combine cultural and natural values. Tikal National Park in Guatemala, for example, shelters Mayan ruins as well as part of Central America's most extensive rain forest. Sacred mountains in China, Australia, and New Zealand also make the list.

## IN DANGER

Both natural disasters such as earthquakes and human actions such as war can threaten a cultural site, this category is not as a sanction but as a red flag. The goal is to rally assistance to restore a site as much as possible.

Aachen Cathedral GERMANY

Meteora GREECE

Tassili-n-Ajjer National Park ALGERIA

Kaziranga National Park

Sacred city of Anuradhapura SRI LANKA

Luang Prabang LAOS

Ancient city of Polonnaruwa SRI LANKA

TASSILI-N-AJJER, ALGERIA

### AFRICA

57 | 32 | 3 | 16

Africa accounts for a quarter of World Heritage natural sites. It also contains the highest number of locations on the Warfare Watch. The Democratic Republic of the Congo has made efforts to protect parks, home to endangered elephants and rhinoceroses.

### ASIA

132 | 28 | 6 | 9

Asia leads Asian nations with 28 selections, the most for any region outside Europe. In Southeast Asia, Lorentz National Park in Indonesia and Kinabalu Park in Malaysia protect vast rain forest.

Komodo National Park INDONESIA

Heard and McDonald Islands

HEARD ISLAND, AUSTRALIA

### AUSTRALIA

0 | 13 | 5 | 0

Australia's embrace of the World Heritage concept has led to the inscription of its sites. Australia has also pioneered the "cluster" approach, grouping sites under one theme, such as the Wet Tropics.

DE CONSERVACIÓN
COSTA
TALAMANCA
RESERVES/LA AMISTAD NATIONAL
CÔTE D'IVOIRE
TAÏ
NATIONAL
OLD CITY OF DUBROVNIK
HISTORIC COMPLEX SPLIT WITH THE
PALACE OF DIOCLETIAN
PLITVICE LAKES PARK
EPISCOPAL COMPLEX OF THE EUPHRASIAN
IN
CITY OF
OLD HAVANA AND FORTIFICATIONS
TRINIDAD VALLEY LOS
SAN PEDRO DE LA
SANTIAGO DE CUBA
DEL GRANMA
VIÑALES VALLEY
ARCHAEOLOGICAL LANDSCAPE THE
FIRST COFFEE PLANTATIONS IN THE
SOUTHEAST CUBA
ALEJANDRO DE HUMBOLDT NATIONAL PARK
CYPRUS
PAPHOS
PAINTED IN TROODOS
CHOIROKOITIA
REPUBLIC
HISTORIC OF
HISTORIC CENTER ČESKÝ KRUMLOV
CENTER OF
PILGRIMAGE CHURCH OF JOHN OF
NEPOMUK AT HORA
HORA: HISTORICAL CENTER
WITH CHURCH OF BARBARA AND
CATHEDRAL OF LADY AT SEDLEC
LEDNICE-VALTICE CULTURAL LANDSCAPE
HOLAŠOVICE HISTORICAL VILLAGE
RESERVATION
GARDENS AND CASTLE AT
LITOMYŠL CASTLE
HOLY TRINITY COLUMN IN OLOMOUC
TUGENDHAT VILLA IN
DEMOCRATIC REPUBLIC CONGO
PARK
NATIONAL PARK
GARAMBA NATIONAL PARK
SALONGA NATIONAL PARK
OKAPI WILDLIFE
JELLING: RUNIC STONES
AND CHURCH
CATHEDRAL
KRONBORG
MORNE TROIS NATIONAL PARK
REPOBLIC
COLONIAL CITY OF SANTO
QUITO
SANGAY NATIONAL
HISTORIC OF
RÍOS DE CUENCA
THE PYRE
ABU SIMBEL

# KOMODO

INDONESIA

A natural choice for World Heritage recognition, Komodo National Park in the Lesser Sundra Islands provides a last sanctuary for the endemic Komodo dragon. Largest of lizards, it can reach a lonesome ten feet in length. A surge in tourism and predation by feral dogs had overwhelmed staff and endangered the dragons. This listing brought vital funding, with groups such as the United Nations Foundation and the Nature Conservancy helping the park-strapped park. Donor money has stabilized the dragons' situation, and the park is finishing a long-needed management plan.

PHOTOGRAPH BY [illegible] NICHOLS

## PROFILE

YEAR [illegible]

CATEGORY: Natural

[illegible] Site protects most of the world's population of Komodo dragons.

[illegible] Reduction in [illegible] and progress on a 25-year plan to handle tourism.

EL SALVADOR
JOYA DE CERÉN ARCH
ESTONIA
HISTORIC
ETHIOPIA
ROCK-HEWN CHURC
SIMEN
TIYA
FORTRESS OF SUC
PETÄJÄVESI OLD CHU
VERLA
BRONZE
SAM
FRANCE
MONT-SAINT-MICHEL AND
ATHEDRAL
PARI
DECORATED GRO
VÉZÈRE VALLE
PALAIS AND
AMIENS
ROMAN THEATER
AND TRIUMPHAL
ROMA
ROMANESQUE MONUMEN
OF
PLACE
PLACE
CARRI
NANCY
CHURCH OF SAINT-SAVIN SUR
CAPE GIROLATA, CAPE PORTO, SCANDOLA
RESERVE, AND THE PIANA
PONT DU GARD (ROMAN AQUEDUCT)
STRASBOURG: GRANDE
BANKS OF THE SEINE
REIMS:
OF NOTRE-DAME
FORMER ABBEY OF SAINT-REMI,
AND PALACE OF TAU
HISTORIC
AVIGNON
CANAL DU MIDI
FORTIFIED
OF
ROUTES
DE COMPOSTELA
HISTORIC
JURISDICTION
SAINT-EMILION
THE LOIRE
BETWEEN
SULLY-SUR-LOIRE
PROVINS,
OF
FRANCE AND SPAIN
PERDU
GEORGIA
CITY MUSEUM
CATHEDRAL AND
GERMANY
AACHEN CATHE
SPEYER CATHE
WÜRZBURG RESIDENCE
PILGRIMAGE CHURCH
CASTLES O
FALKE
EL MAR
C

# ANURADHAPURA SRI LANKA

**Jungle mist flows like incense smoke over the Runaweli stupa, a Buddhist pilgrimage site in the sacred city of Anuradhapura. Shrines and religious statues (left) rise throughout the 2,500-year-old center. A World Heritage designation could not shield the site from political violence in 1985 as Tamil separatists attacked the city and massacred nearly 300 people. The destruction last year of the Bamian Buddhas in Afghanistan has fired a debate about how to prevent these "crimes against culture." UNESCO officials say the World Heritage treaty needs legal muscle, including the use of economic sanctions.**

## PROFILE

1982

Cultural

Complex of ancient religious buildings in a sacred Buddhist city.

Mapping of site to prevent encroachment by farms and modern buildings.

JUKKA JOKILEHTO (LEFT); BRUNO BARBEY, MAGNUM

GREATER ACCRA, AND EASTERN
AND WESTERN REGIONS

ARCHAEOLOGICAL SITE OF DELPHI
ACROPOLIS, ATHENS
MOUNT ATHOS
METEORA
PALEOCHRISTIAN AND BYZANTINE
MONUMENTS OF THESSALONIKI
ARCHAEOLOGICAL SITE OF EPIDAURUS
MEDIEVAL CITY OF RHODES
MYSTRAS
ARCHAEOLOGICAL SITE OF OLYMPIA
DELOS
MONASTERY OF DAPHNI, HOSIOS
LOUKAS, AND NEA MONI OF CHIOS
PATMOS, HISTORIC CENTRE OF CHORA WITH THE
MONASTERY OF SAINT JOHN THE
THEOLOGIAN AND THE CAVE OF THE
APOCALYPSE ON THE ISLAND OF PATMOS
GUATEMALA
TIKAL NATIONAL PARK
ANTIGUA
ARCHAEOLOGICAL PARK AND RUINS
OF QUIRIGUA
CÔTE
NATIONAL PARK: CITADEL, SANS
SEE
VATICAN CITY
HONDURAS
MAYA SITE OF COPAN
RÍO PLATANO
HUNGARY
THE BANKS OF THE DANUBE
AND THE BUDA CASTLE QUARTER
HOLLÓKŐ

# EVERGLADES

Daylight floods through the water-fed wilderness of Everglades National Park in South Florida. One of the first sites in North America to gain a World Heritage ranking, the Everglades was hit with a danger listing in 1993 in response to problems such as the diversion of water for surrounding urban areas and the increase in fish and bird kills from pollution. International attention prompted by the danger listing helped build support for new parkland purchases and for the recent state and federal plan to restore the water flow, the best chance for saving the "river of grass."

RANDY WELLS, GETTY

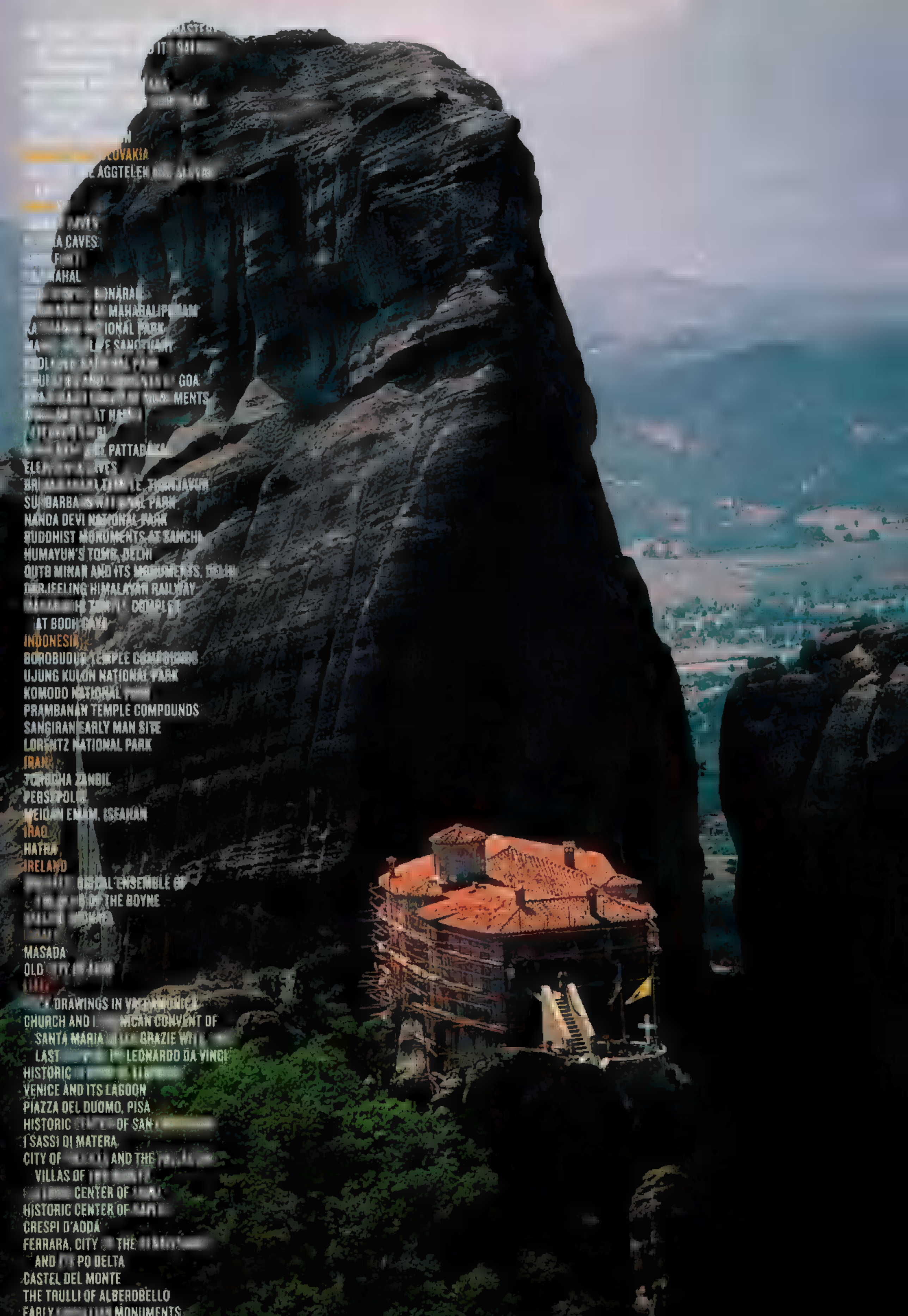
## PROFILE

YEAR DESIGNATED:

CATEGORY: Natural/In Danger

Largest subtropical wilderness in the U.S. fish and bird sanctuary.

IMPACT: helped apply pressure for passage of park restoration plan.


AGGTELEK
A CAVES
MAHAL
GOA
MENTS
PATTADAKAL
ELEPHANTA CAVES
SUNDARBANS NATIONAL PARK
NANDA DEVI NATIONAL PARK
BUDDHIST MONUMENTS AT SANCHI
HUMAYUN'S TOMB, DELHI
QUTB MINAR AND ITS MONUMENTS, DELHI
DARJEELING HIMALAYAN RAILWAY
COMPLEX
AT BODH GAYA
INDONESIA
BOROBUDUR TEMPLE COMPOUNDS
UJUNG KULON NATIONAL PARK
KOMODO NATIONAL PARK
PRAMBANAN TEMPLE COMPOUNDS
SANGIRAN EARLY MAN SITE
LORENTZ NATIONAL PARK
IRAN
TCHOGHA ZANBIL
PERSEPOLIS
MEIDAN EMAM, ESFAHAN
IRAQ
HATRA
IRELAND
BOYNE
MASADA
OLD
DRAWINGS IN
CHURCH AND
SANTA MARIA
GRAZIE WI
LAST
LEONARDO DA VINCI
HISTORIC
VENICE AND ITS LAGOON
PIAZZA DEL DUOMO, PISA
HISTORIC
OF SAN
I SASSI DI MATERA
CITY OF
AND THE
VILLAS OF
CENTER OF
HISTORIC CENTER OF
CRESPI D'ADDA
FERRARA, CITY
THE
AND
PO DELTA
CASTEL DEL MONTE
THE TRULLI OF ALBEROBELLO
EARLY
MONUMENTS
OF


**Solitary in life, monks cluster together in an ossuary after death, their earthly remains displayed in one of six cloisters at Meteora, a rock-bound monastic community inhabited since the 1300s. Its Roussanou monastery (left) grips a pinnacle more than a thousand feet above the Thessalian plains in northern Greece. The World Heritage listing recognizes Meteora for the splendor of its setting as well as for the Byzantine frescoes on its walls. At the time of its inscription, European sites dominated the World Heritage choices. Since then the list has opened up to represent—and honor—the wonders of the world.**

## PROFILE

1988

Mixed (Cultural and Natural)

Unique example of monastic community.

Continuing restoration and conservation of six surviving buildings.

ROBERT LEON

ROYAL PALACE AT
THE ROYAL HOUSE
OF SAVOY
GARDEN, PADUA
AND THE (PALMARIA, TINO,
CATHEDRAL, TORRE CIVICA
AND PIAZZA GRANDE
ARCHAEOLOGICAL AREAS OF POMPEII
AND TORRE
ANNUNZIATA
AMALFITANA
AREA OF AGRIGENTO
VILLA ROMANA DEL
DI
CILENTO
NATIONAL PARK
CENTER OF
ARCHAEOLOGICAL AREA AND THE
PATRIARCHAL BASILICA OF AQUILEIA
VILLA ADRIANA IN TIVOLI
AEOLIAN ISLANDS
SAN FRANCESCO
AND OTHER FRANCISCAN
CITY OF VERONA
VILLA D'ESTE IN TIVOLI
LATE BAROQUE TOWNS OF VAL DI NOTO
AND
THE
PROPERTIES OF THE HOLY
AND PAOLO FUORI LE MURA

JAPAN

BUDDHIST MONUMENTS IN THE
HORYU-JI AREA
YAKUSHIMA
SHIRAKAMI-SANCHI
HISTORIC MONUMENTS OF ANCIENT
KYOTO (KYOTO, UJI AND OTSU
CITIES)
HISTORIC VILLAGES OF SHIRAKAWA-GO
AND GOKAYAMA
HIROSHIMA
ITSUKUSHIMA
OF
NARA
PROPERTIES
OLD
PETRA

KENYA

KENYA NATIONAL
NATURAL
PARKS
OLD
LAMU

KOREA, S

TEMPLE JANGGYEONG
THE DEPOSITORIES
THE
KOREANA
WOODBLOCKS
JONGMYO
CHANGDEOKGUNG PALACE
GOCHANG, HWASUN, AND
GANGHWA DOLMEN SITES

LAOS

PRABANG
VAT PHOU
THE
LATVIA

ANJAR

LEPTIS
ARCHAEOLOGICAL
ART
CUMBRIAN
OLD QUARTERS
AND FORTIFICATIONS
OHRID
TSINGY DE BEMARAHA STRICT
NATURE RESERVE
HILL OF

MALAWI

MALAYSIA

GUNUNG MULU
PARK

MALTA

HAL SAFLIENI
CITY OF VALETTA

BIRTHPLACE OF
KSOUR OF OUADANE,
AND

MEXICO

SIAN KA'AN
PRE-HISPANIC CITY
OF PALENQUE
CENTER OF
AND XOCHIMILCO
CITY
CENTER OF OAXACA
AND
MONTE
CENTER OF PUEBLA
TOWN OF GUANAJUATO
AND
ITZA
PRE-HISPANIC CITY OF EL TAJIN
WHALE SANCTUARY OF EL
OF
FRANCISCO
ON THE
OF POPOCATÉPETL
PRE-HISPANIC TOWN
UXMAL

ZONE
CABAÑAS IN
HISTORIC
MEDINA OF MARRAKESH
KSAR OF AIT-BEN-HADDOU

ISLAND OF MOZAMBIQUE

ROYAL CHITWAN NATIONAL
LUMBINI, BIRTHPLACE OF
LORD BUDDHA

NETHERLANDS

DEFENSE LINE OF AMSTERDAM
MILL NETWORK AT
KINDERDIJK-ELSHOUT
HISTORIC AREA OF WILLEMSTAD,
INNER CITY, AND HARBOR
NETHERLANDS ANTILLEAN
WOUDA STEAM
WESTERSCHELDE
WESTERSCHELDE
NEW ZEALAND
TONGARIRO NATIONAL
TE WAHIPOUNAMU
NEW ZEALAND SUBANTARCTIC ISLANDS

NICARAGUA

LEON
AND

AIR AND TENERE NATIONAL
W NATIONAL PARK OF

NORWAY

URNES STAVE CHURCH
BRYGGEN
RØROS
ROCK
OF
FORT
ARCHAEOLOGICAL
AL-KHUTM
ARABIAN
THE FRANKINCENSE
PAKISTAN
ARCHAEOLOGICAL
AT
MOHENJO
RUINS AT
AND NEIGHBORING
REMAINS
AT
MONUMENTS
THATTA
FORT AND SHALAMAR GARDENS
IN
ROHTAS

FORTIFICATIONS ON
CARIBBEAN
OF
PORTOBELO
SAN

DARIÉN
THE HISTORIC DISTRICT
PANAMA
AND THE
URUGUAY

OF LA SANTÍSIMA
DE
AND
IMARANGUE

PICCHU
CHAN
NATIONAL PARK
HISTORICAL
LIMA
AND
NASCA
CAL
CENTER OF
PUERTO
RIVER

POLAND

WIELICZKA SALT
AUSCHWITZ
HISTORIC
CITY OF ZAMOŚĆ
OLD
AND
SLOVENIA

SPAIN

ALTAMIRA
THE MODERNIST
AND PARK
AND
CHURCHES OF PEACE
AND

SWEDEN

OF THE TOWN OF
GAMLA STAN
AND TOWER OF BELÉM IN LISBON
MONASTERY OF BATALHA
CONVENT OF CHRIST IN TOMAR
HISTORIC CENTER OF ÉVORA
MONASTERY OF ALCOBAÇA
CULTURAL LANDSCAPE OF SINTRA
HISTORIC CENTRE OF OPORTO
PREHISTORIC
AND
OF MADEIRA
ALTO DOURO
HISTORIC

SWITZERLAND

VILLAGES WITH FORTIFIED

MONASTERY OF HOREZU
MOLDAVIA

MARAMURES

RUSSIA

HISTORIC
PETERSBURG
KIZHI
RED
NOVGOROD
SURROUNDINGS

CULTURAL AND HISTORIC ENSEMBLE OF THE SOLOVETSKY ISLANDS
WHITE MONUMENTS OF VLADIMIR AND SUZDAL
ARCHITECTURAL ENSEMBLE OF THE TRINITY SERGIUS LAVRA IN SERGIYEV POSAD
CHURCH OF THE ASCENSION IN KOLOMENSKOYE
VIRGIN KOMI FORESTS
LAKE BAIKAL
VOLCANOES OF KAMCHATKA
GOLDEN MOUNTAINS OF ALTAI
WESTERN CAUCASUS
ENSEMBLE OF THE FERAPONTOV MONASTERY
HISTORIC AND ARCHITECTURAL COMPLEX OF THE KAZAN KREMLIN
CENTRAL SIKHOTE-ALIN

### SAINT KITTS AND NEVIS
BRIMSTONE HILL FORTRESS NATIONAL PARK

### SENEGAL
ISLAND OF GORÉE
DJOUDJ NATIONAL BIRD SANCTUARY
NIOKOLO-KOBA NATIONAL PARK
ISLAND OF SAINT-LOUIS

### SEYCHELLES
ALDABRA ATOLL
VALLÉE DE MAI NATURE RESERVE

### SLOVAKIA
VLKOLÍNEC
BANSKÁ ŠTIAVNICA
SPIŠSKÝ HRAD AND ASSOCIATED CULTURAL MONUMENTS
BARDEJOV TOWN CONSERVATION RESERVE

### SLOVENIA
ŠKOCJAN CAVES

### SOLOMON ISLANDS
EAST RENNELL

### SOUTH AFRICA
GREATER ST. LUCIA WETLAND PARK
ROBBEN ISLAND
FOSSIL HOMINID SITES OF STERKFONTEIN, SWARTKRANS, KROMDRAAI, AND ENVIRONS
UKHAHLAMBA/DRAKENSBERG PARK

### SPAIN
HISTORIC CENTER OF CÓRDOBA
ALHAMBRA, GENERALIFE, AND ALBAYZÍN, GRANADA
BURGOS CATHEDRAL
MONASTERY AND SITE OF THE ESCURIAL, MADRID
PARQUE GÜELL, PALACIO GÜELL, AND CASA MILÀ IN BARCELONA
ALTAMIRA CAVE
OLD TOWN OF SEGOVIA AND ITS AQUEDUCT
MONUMENTS OF OVIEDO AND THE KINGDOM OF THE ASTURIAS
OLD TOWN OF SANTIAGO DE COMPOSTELA
OLD TOWN OF ÁVILA, WITH ITS EXTRA-MUROS CHURCHES
MUDEJAR ARCHITECTURE OF ARAGON
HISTORIC CITY OF TOLEDO
GARAJONAY NATIONAL PARK
OLD TOWN OF CÁCERES
CATHEDRAL, ALCAZAR, AND ARCHIVO DE INDIAS IN SEVILLE
OLD CITY OF SALAMANCA
POBLET MONASTERY
ARCHAEOLOGICAL ENSEMBLE OF MÉRIDA
ROYAL MONASTERY OF SANTA MARÍA DE GUADALUPE
ROUTE OF SANTIAGO DE COMPOSTELA
DOÑANA NATIONAL PARK
HISTORIC WALLED TOWN OF CUENCA
LA LONJA DE LA SEDA DE VALENCIA
LAS MÉDULAS
PALAU DE LA MÚSICA CATALANA AND THE HOSPITAL DE SANT PAU, BARCELONA
SAN MILLÁN YUSO AND SUSO MONASTERIES
UNIVERSITY AND HISTORIC PRECINCT OF ALCALÁ DE HENARES
ROCK ART OF THE MEDITERRANEAN BASIN ON THE IBERIAN PENINSULA
IBIZA, BIODIVERSITY AND CULTURE
SAN CRISTÓBAL DE LA LAGUNA
ARCHAEOLOGICAL ENSEMBLE OF TÁRRACO
PALMERAL OF ELCHE
ROMAN WALLS OF LUGO
CATALAN ROMANESQUE CHURCHES OF VALL DE BOÍ
ARCHAEOLOGICAL SITE OF ATAPUERCA
ARANJUEZ CULTURAL LANDSCAPE

### SRI LANKA
SACRED CITY OF ANURADHAPURA
ANCIENT CITY OF POLONNARUWA
ANCIENT CITY OF SIGIRIYA
SINHARAJA FOREST RESERVE
SACRED CITY OF KANDY
OLD TOWN OF GALLE AND ITS FORTIFICATIONS
GOLDEN TEMPLE OF DAMBULLA

### SURINAME
CENTRAL SURINAME NATURE RESERVE
HISTORIC INNER CITY OF PARAMARIBO

### SWEDEN
ROYAL DOMAIN OF DROTTNINGHOLM
BIRKA AND HOVGÅRDEN
ENGELSBERG IRONWORKS
ROCK CARVINGS IN TANUM
SKOGSKYRKOGÅRDEN
HANSEATIC TOWN OF VISBY
CHURCH VILLAGE OF GAMMELSTAD, LULEÅ
LAPONIAN AREA
NAVAL PORT OF KARLSKRONA
HIGH COAST
AGRICULTURAL LANDSCAPE OF SOUTHERN ÖLAND
MINING AREA OF THE GREAT COPPER MOUNTAIN IN FALUN

### SWITZERLAND
CONVENT OF ST. GALL
BENEDICTINE CONVENT OF ST. JOHN AT MÜSTAIR
OLD CITY OF BERNE
THREE CASTLES, DEFENSIVE WALL AND RAMPARTS OF THE MARKET-TOWN OF BELLINZONA
JUNGFRAU-ALETSCH-BIETSCHHORN

### SYRIA
ANCIENT CITY OF DAMASCUS
ANCIENT CITY OF BOSRA
SITE OF PALMYRA
ANCIENT CITY OF ALEPPO

### TANZANIA
NGORONGORO CONSERVATION AREA
RUINS OF KILWA KISIWANI AND RUINS OF SONGO MNARA
SERENGETI NATIONAL PARK
SELOUS GAME RESERVE
KILIMANJARO NATIONAL PARK
STONE TOWN OF ZANZIBAR

### THAILAND
HISTORIC TOWN OF SUKHOTHAI AND ASSOCIATED HISTORIC TOWNS
HISTORIC CITY OF AYUTTHAYA AND ASSOCIATED HISTORIC TOWNS
THUNGYAI–HUAI KHA KHAENG WILDLIFE SANCTUARIES
BAN CHIANG ARCHAEOLOGICAL SITE

### TUNISIA
AMPHITHEATER OF EL JEM
SITE OF CARTHAGE
MEDINA OF TUNIS
ICHKEUL NATIONAL PARK
PUNIC TOWN OF KERKUANE AND ITS NECROPOLIS
MEDINA OF SOUSSE
KAIROUAN
DOUGGA/THUGGA

### TURKEY
HISTORIC AREAS OF ISTANBUL
GÖREME NATIONAL PARK AND THE ROCK SITES OF CAPPADOCIA
GREAT MOSQUE AND HOSPITAL OF DIVRIĞI
HATTUSHA
NEMRUT DAĞ
XANTHOS-LETOON
HIERAPOLIS-PAMUKKALE
CITY OF SAFRANBOLU
ARCHAEOLOGICAL SITE OF TROY

### TURKMENISTAN
STATE HISTORICAL AND CULTURAL PARK OF ANCIENT MERV

### UGANDA
BWINDI IMPENETRABLE NATIONAL PARK
RWENZORI MOUNTAINS NATIONAL PARK
TOMBS OF BUGANDA KINGS AT KASUBI

### UKRAINE
KIEV: SAINT-SOPHIA CATHEDRAL AND RELATED MONASTIC BUILDINGS, KIEV-PECHERSK LAVRA
L'VIV: THE ENSEMBLE OF THE HISTORIC CENTER

### UNITED KINGDOM
GIANT'S CAUSEWAY AND CAUSEWAY COAST
DURHAM CASTLE AND CATHEDRAL
IRONBRIDGE GORGE
STUDLEY ROYAL PARK, INCLUDING THE RUINS OF FOUNTAINS ABBEY
STONEHENGE, AVEBURY, AND ASSOCIATED SITES
CASTLES AND TOWN WALLS OF KING EDWARD IN GWYNEDD
ST. KILDA
BLENHEIM PALACE
CITY OF BATH
HADRIAN'S WALL
WESTMINSTER PALACE, WESTMINSTER ABBEY, AND SAINT MARGARET'S CHURCH
HENDERSON ISLAND
TOWER OF LONDON
CANTERBURY CATHEDRAL, ST. AUGUSTINE'S ABBEY, AND ST. MARTIN'S CHURCH
OLD AND NEW TOWNS OF EDINBURGH
GOUGH ISLAND WILDLIFE RESERVE
MARITIME GREENWICH
HEART OF NEOLITHIC ORKNEY
HISTORIC TOWN OF ST. GEORGE AND RELATED FORTIFICATIONS (BERMUDA)
BLAENAVON INDUSTRIAL LANDSCAPE
DORSET AND EAST DEVON COAST
DERWENT VALLEY MILLS
NEW LANARK
SALTAIRE

### UNITED STATES
MESA VERDE NATIONAL PARK
YELLOWSTONE NATIONAL PARK
GRAND CANYON NATIONAL PARK
EVERGLADES NATIONAL PARK
INDEPENDENCE HALL
REDWOOD NATIONAL PARK
MAMMOTH CAVE NATIONAL PARK
OLYMPIC NATIONAL PARK
CAHOKIA MOUNDS STATE HISTORIC SITE
GREAT SMOKY MOUNTAINS NATIONAL PARK
LA FORTALEZA AND SAN JUAN HISTORIC SITE (PUERTO RICO)
STATUE OF LIBERTY
YOSEMITE NATIONAL PARK
MONTICELLO AND UNIVERSITY OF VIRGINIA IN CHARLOTTESVILLE
CHACO CULTURE NATIONAL HISTORICAL PARK
HAWAII VOLCANOES NATIONAL PARK
TAOS PUEBLO
CARLSBAD CAVERNS NATIONAL PARK

### URUGUAY
HISTORIC QUARTER OF THE CITY OF COLONIA DEL SACRAMENTO

### UZBEKISTAN
ITCHAN KALA
HISTORIC CENTER OF BUKHARA
HISTORIC CENTER OF SHAKHRISYABZ
SAMARQAND: CROSSROADS OF CULTURES

### VENEZUELA
CORO AND ITS PORT
CANAIMA NATIONAL PARK
CIUDAD UNIVERSITARIA DE CARACAS

### VIETNAM
COMPLEX OF HUE MONUMENTS
HA LONG BAY
HOI AN ANCIENT TOWN
MY SON SANCTUARY

### YEMEN
OLD WALLED CITY OF SHIBAM
OLD CITY OF SANAA
HISTORIC TOWN OF ZABID

### YUGOSLAVIA
NATURAL AND CULTURO-HISTORICAL REGION OF KOTOR
STARI RAS AND SOPOĆANI
DURMITOR NATIONAL PARK
STUDENICA MONASTERY

### ZAMBIA AND ZIMBABWE
MOSI-OA-TUNYA/VICTORIA FALLS

### ZIMBABWE
MANA POOLS NATIONAL PARK, SAPI AND CHEWORE SAFARI AREAS
GREAT ZIMBABWE NATIONAL MONUMENT
KHAMI RUINS NATIONAL MONUMENT

For this complete listing of World Heritage sites some descriptions have been abbreviated. Spellings are those used by the National Geographic Society. ■

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Prehistoric [illegible]

[illegible] COLOMBEL [illegible]

HOTSPOTS

PRESERVING PIECES OF A FRAGILE BIOSPHERE

# New Zealand

On a rocky ledge on an offshore crag, the tuatara wears the [illegible] look. Its appearance has changed little since the time of the many non-mammalian species that once [illegible] the evolution of New Zealand, the squirrel-size rep[illegible] the sole survivor of the lineage of this remote evolutionary raft.

BY HENRIETTA WARNE

PHOTOGRAPHS BY FRANS LANTING

**Fair-weather friends** waddle through an unlikely home, a lush forest on the Snares Islands off New Zealand's South Island. Called Snares crested penguins, they breed only on these few fragments of land—the largest measuring about two miles long—where

visitation is permitted only for scientific or conservation purposes. Prior to human settlement of New Zealand 700 years ago, penguins are believed to have inhabited the shores of all the main islands. The country still boasts six species, the greatest penguin diversity in the world.

**Tolkien's Middle-earth—that's what photographer Frans Lanting calls Fiordland, New Zealand's largest national park. Webs of cascading water, veils of cloud, and stands of silver beech lend mystery to this secluded southwestern edge of the South Island.**

Peaks rising 6,500 feet from the Tasman Sea face air masses that "smack into the mountains and let loose deluges of rain," says ecologist Alastair Jamieson. The result: Precipitation that tops 21 feet a year, making Fiordland one of the wettest places on Earth.

THREE'S A CROWD in a two-man tent, especially when you're jackknifed around an assortment of packs and camera cases, a couple of car batteries, and a videophone. I gave up trying to sleep and watched the flimsy nylon walls heaving with each volley of rain.

Restless, I punched the ON button of the video display—a playing-card-size screen on a domestic security phone pressed into service as a wildlife monitor—to see if there was any activity on the island summit 80 yards away. Nothing. Just a few scrubby bushes flailing in the wind.

I turned off the monitor, wormed my way back into my space between the two wildlife rangers with whom I was sharing this nighttime vigil, and listened to the cries of petrels careering overhead. Then, just before midnight, I heard a sound so deep and resonant it could have been coming from a Tibetan monastery. *Oooooom . . . oooooom . . . oooooom. . . .*

Three hands reached simultaneously for the video button. The screen flickered to life, and there, puffed up like a soccer ball, was a kakapo, New Zealand's ancient parrot of the night. He was standing in his bowl, a shallow depression he had made in the peaty soil, and booming his message to the four winds: "I am Lionel, male of males. Come to me, you females of Whenua Hou!"

It was a mesmerizing sound—so unlike a parrot, so unlike any bird, yet so in keeping with New Zealand's endemic menagerie of misfits and marvels, within which the kakapo ranks among the most misfitted and marvelous. This bird that thinks it's a bagpipe is the world's heaviest parrot and the world's only flightless parrot. And there are but 86 in existence. Most of them, including just 21 adult females on which the future of the species ultimately depends, live on this island: Whenua Hou, a wildlife sanctuary off the western coast of Stewart Island, smallest and southernmost of New Zealand's three main islands.

Once, the boom of the kakapo was part of the night music of all New Zealand. Each evening during the three-month summer courtship season males would gather in their ridgetop display grounds and sound off until dawn, a troupe of basso profundos trying to outdo one another in operatic fervor. Females attending these recitals bestowed their favors on the males whose performances pleased them most.

It is a matter of immeasurable sorrow to many of us who live in this country that the voice of the kakapo has been silenced throughout the mainland (the term we use for the North and South Islands, where most of New Zealand's 3.8 million people live). Its plangent chants have been replaced by the guttural hisses and shrieks of a plague of introduced Australian brushtail possums, marsupial leaf-eating machines that have supplanted the kakapo and other browsing birds from New Zealand's forests. The tracks to the kakapo display grounds are today traveled not by the sturdy feet of parrots but by the stealthy paws of their killers: rats, stoats, and feral cats—alien species that today have the run of the land.

Only on Whenua Hou and two other small predator-free islands can kakapos walk in peace—albeit with miniature radio transmitters attached to their backs and their every move monitored by human observers.

When I visited Whenua Hou, staff of the Department of Conservation, the government agency charged with preserving the country's biodiversity, were preparing for what promised to be the best kakapo breeding season in 20 years. More than a hundred volunteers had been enlisted to take part in round-the-clock surveillance from tents like the one I was in. Their job would be to watch each nest on a video monitor, hurrying to check the eggs when the female left to forage, covering them with a mini-electric blanket if they became too cold, and radioing the island control center if anything went wrong.

There was an air of military efficiency about the place befitting the importance of the mission and the battle at hand. Like our national bird, the kiwi, kakapos embody the uniqueness and the plight of New Zealand's endemic biota. These birds are flagships of a threatened biological fleet. If we save them—or any of New Zealand's dozens of critically endangered species—we strike a blow for the cause of global ecological restoration. We remind ourselves and the world that the road to extinction is not a one-way street. And we preserve a bunch of truly outlandish creatures.

Flash meets feathers as a foraging female kakapo (above) on Whenua Hou yields a rare photograph of an equally rare bird. A male digs a bowl, then booms (below left) and chimps (below right) to attract females. His calls carry up to three miles. Experts think the

kakapo's ancestors first flew to New Zealand long ago and, finding no mammalian predators, gradually lost the need to fly. Infrared video allows unobtrusive spying (left). Down to 86 birds, the world's heaviest parrot species has become the object of urgent conservation efforts.

A bird in
hand
hatched in the Auck-
land Zoo,
the vulnerabi
flightless birds
first few months of
of kiwis fall
to predators like cats
and stoats. Nanyan
Rukuruku Cheer hopes
that she'll play a big

THE SURPASSING STRANGENESS of what we have in this country came home to me one night on Whenua Hou when I was helping weigh a three-year-old female kakapo called Aranga. (All kakapos have names, many of them suggested by New Zealand children. Aranga means "resurrection" in Maori.) The first surprise had been to find a flightless bird 30 feet up a tree. Evidently climbing is not a problem for kakapos, as Aranga demonstrated, using her beak as an ice ax and her toes as crampons to shinny down a supplejack vine to the ground.

As she nibbled the sweet potato I was using to coax her onto the scale, I felt the tickle of her whiskers and the warmth of her down. "Shall I cover you with a cloak of kakapo feathers?" a Maori saying asks of someone who complains of the cold. I leaned close, breathing the sweet fustiness of her plumage—an odor I once heard likened to the inside of a clarinet case.

When the food was gone and Aranga looked up with her inquisitive, owl-like face, I had to laugh. Look at you, I thought: An oversize budgie with an antique perfume that walks by night, lives not in the tropics but in the cold blast of the roaring forties, and breeds by holding a singing contest.

If kakapos seem bizarre, consider the four surviving species of kiwis, New Zealand's diminutive relatives of the ostrich. These flightless striders of the forest floor stretch the very definition of the word "bird." They have nostrils at the tips of their prodigious beaks (unlike any other bird), feathers that are shaggy, like hair, and an enormous egg that can be up to a fifth the weight of the bird that laid it. Their body temperature is closer to that of a mammal than a bird, and they are thought to scent-mark their territories, like dogs.

Kiwis and kakapos are far from the only avian oddities that have evolved in New Zealand, which is also home to the wrybill, the only bird in the world with a beak whose tip is skewed sideways (the better to probe for insects under stones in stream riffles); the kea, a mountain parrot that can rip open the back of a sheep or remove the window rubber from a parked car with equal facility; and the extinct huia, a lustrous blue-black beauty with tangerine head wattles and a bill for each sex—his stout and woodpeckerish, hers slender and downcurved.

Eccentricities abound among the invertebrates too. These islands have produced several tribes of wingless crickets called wetas, many of which possess profusely spined hind legs that they kick over their heads when threatened. Males of one weta species possess a mammoth pair of tusks for jousting.

There are land snails the size of hockey pucks, a spelunking spider that hangs its egg sac from the ceilings of limestone caves, and—the ultimate contradiction—a flightless fly. Among the more than 150 species of native earthworms—the largest of them four feet in length—is one which luminesces so strongly that a zoology professor is said to have once read a lecture by the light of a single worm.

How did this land become such a pageant of peculiarity? Two reasons, say evolutionary biologists: size and isolation. New Zealand is the largest oceanic archipelago on the planet and for its size the most distant from any major landmass. Large area and varied topography give scope for the processes of natural selection to produce diverse outcomes. Isolation fosters, preserves, and perpetuates the outcomes. The combination of these factors made New Zealand a hothouse of speciation, a laboratory where life experimented with what was possible and where the catchcry was "*Vive la différence!*"

The slice of land on which this genetic poker game took place sheared off from the remains

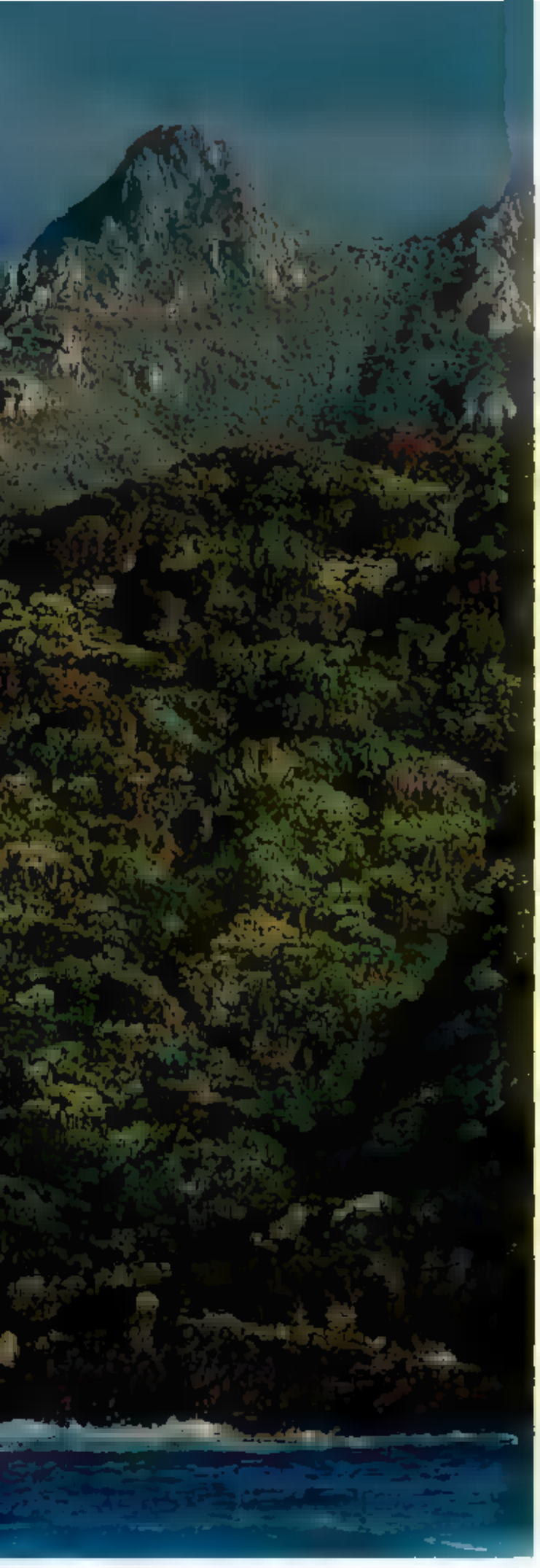
of the ancient supercontinent Gondwana 80 million years ago and has been adrift ever since. During its long solitude it went through periods of submergence, when all that showed above the waves was a string of low, swampy islands, and through episodes of mountain building. It wandered between the tropics and the South Pole and endured tens of thousands of years in the deep freeze of glaciation.

Remarkably, many of the original players stayed at the table: the iguana-like tuatara, its slo-mo metabolism ticking away quietly while the land rose and fell around it; primitive earless frogs that lack webbing between their toes and can't croak; and the legendary moa —11 species ranging from a 40-pound mini-cassowary to the long-necked *Dinornis giganteus*, a quarter of a ton in weight and six feet high at the top of its back, possibly the tallest bird ever to walk the Earth.

The only newcomers were those that could fly or float their way across the oceanic barrier. Other than bats, no mammals succeeded in doing that, but dozens of birds did, including the ancestors of the kiwi and kakapo. Over the centuries many of these new arrivals, encountering no mammalian predators to harass them, went to ground. By the time humans arrived, a third of New Zealand's birds were either flightless or aerodynamically challenged.

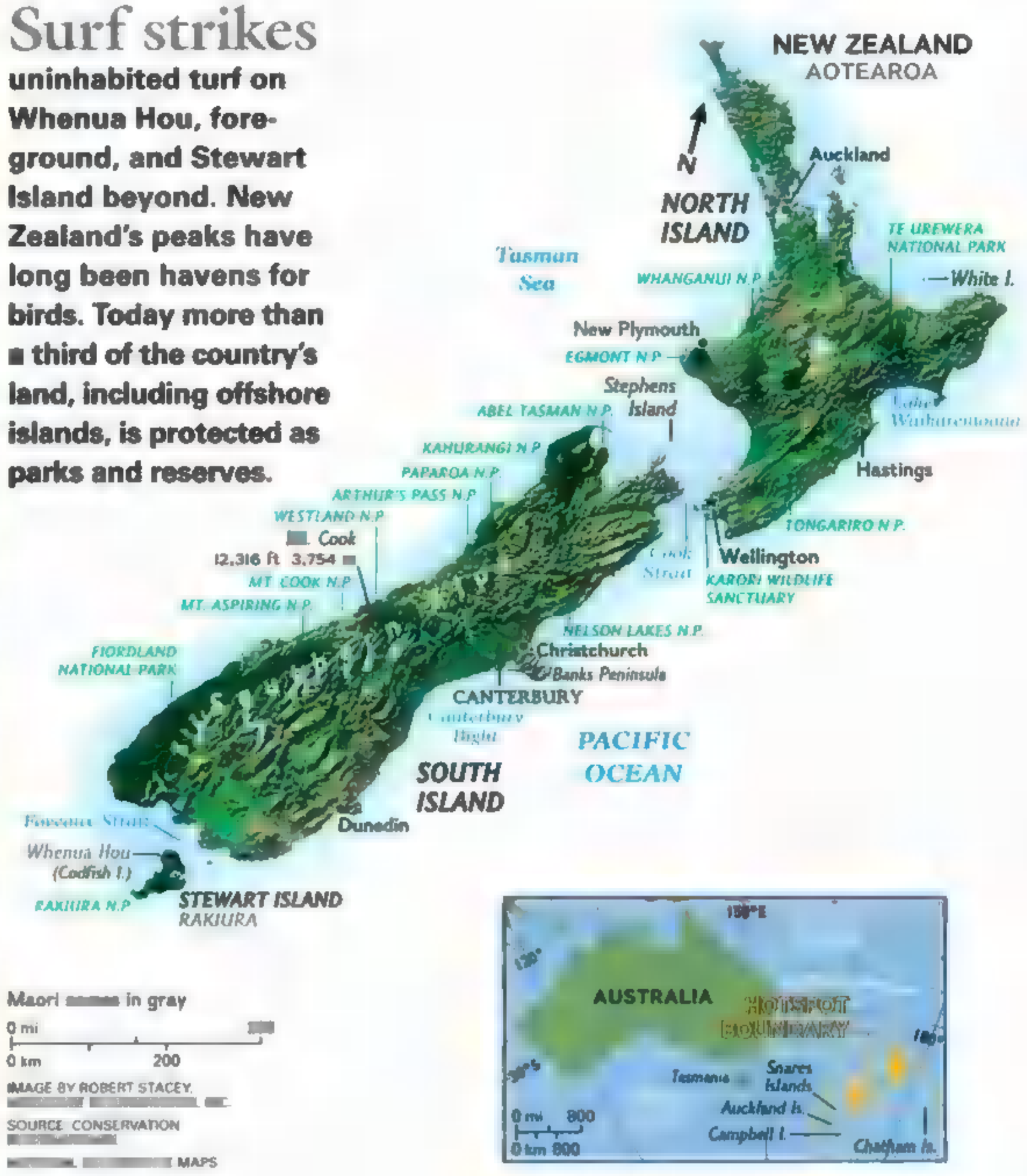
Many species—vertebrate and invertebrate —became giants of their kind. Large herbivores process food more efficiently than small ones, and in the absence of other factors (such as the need to nimbly escape fast-moving predators) bigger is better. From weevils to waterfowl, species after species took this route, appropriating niches occupied elsewhere by mammals. In place of deer we had the moa; in place of cows, the takahe, a heavy grass-eating rail; in place of mice, the weta.

Cosseted by a benign climate and removed



# Surf strikes

**uninhabited turf on Whenua Hou, foreground, and Stewart Island beyond. New Zealand's peaks have long been havens for birds. Today more than a third of the country's land, including offshore islands, is protected as parks and reserves.**




from the competitive cut and thrust of continental evolution, life in New Zealand slowed down. Species grew sedately, bred infrequently, and became Methuselahs of longevity.

IT WAS TOO GOOD to last. Around A.D. 1300 the spell was broken. Across the same ocean that had kept mammals at bay for 80 million years came a smooth-skinned supermammal in a canoe.

Although there is evidence that humans had visited at least a thousand years earlier, this time they came to settle, bringing rats, dogs, spears, and fire. The impact of the Polynesian colonists was immediate and catastrophic.

**HOTSPOTS**

Earth's richest and most threatened reservoirs of plant and animal life.

NEW ZEALAND

**AREA** 103,883 sq mi

**HABITAT TYPES**

Plains, temperate rain forests, mountains

**FLAGSHIP SPECIES**

Kiwi, kakapo, kea, penguin, albatross, tuatara

**ENDEMIC SPECIES**

2,300 plants, 3 mammals (bats), [illegible] birds, 61 reptiles, 4 amphibians

**PRINCIPAL THREATS**

Introduced predators like cats, rats, stoats, ferrets, and Australian brushtail possums

Within a hundred years the moas were gone. A few stragglers may have survived until the 1400s, but as viable species they were finished. Their demise became a byword for extinguished life. "*Ka ngaro i te ngaro o te moa*" run the words of a Maori lament. "Lost as the moa is lost."

Several other flightless birds joined moas in the cooking pits and shortly thereafter on the extinction list. Deprived of such prey, Haast's eagle, a raptor with a wingspan up to ten feet and talons the size of a tiger's claws—the largest eagle that has ever lived—went the same way.

Less than 500 years after Polynesians landed, Europeans followed in their wake, bringing a

retinue of even more deadly predators along with tools and attitudes that accelerated the destruction of forests and fauna. Intent on creating the Britain of the South, they set about turning the country into a combination of farm and game park. As well as cattle and the sheep with which New Zealand would become synonymous, they successfully introduced ten species of deer, with moose thrown in for good measure in rainy Fiordland. Austrian chamois and Himalayan tahrs were let loose in the Southern Alps, where they grazed down a unique alpine flora that had never been subjected to the depredations of hoof and jaw. From our neighbor across the Tasman Sea, several species of wallabies were brought in, plus possums to create ■ fur trade. Rabbits and hares were introduced, then weasels, stoats, and ferrets to control them when their numbers exploded. That bungled attempt at biocontrol has cost us dearly: Mustelids, finding flightless and hole-nesting birds much easier to catch than rabbits, have become the most serious threat to what remain of our larger native birds.

Plant life fared little better. Over much of the country the native rain forest—a relict world of giant ferns, ancient cone-bearing trees, and thick moss carpets—was expunged, replaced with a hybrid flora epitomized by English oaks, American pines, and Australian eucalypts. The world has probably never seen such a comprehensive and rapid example of ecological colonization.

Richard Holdaway uses another word for it: blitzkrieg. Holdaway is a Christchurch paleoecologist who sieves bone fragments from caves and swamps and from the remnants tries to reconstruct the past. On a blistering day in Canterbury when the nor'wester was blowing hotter than a hair dryer, he took me to a vineyard to show me a lost world. We walked past neat rows of Pinot Noir to a gully that was once an old streambed. Holdaway pulled what looked like a broken pick handle out of a bank of debris and handed it to me. "Tibia of a stout-legged moa," he said. Then he lifted the cover off a pallet piled high with bones. "We have sufficient numbers of five different moa species to work out how common each one would have been in the population. For one species we have a whole age series from hatchling to adult. We've never had that before."

The deposit, which Holdaway likens to "finding Tutankhamun's tomb in your backyard," came within an ace of being destroyed before it was even recognized. "An earth-moving contractor was doing some drainage work on the site last year," said Holdaway. "One of the owners dropped by to check on progress and noticed bones sticking out of a pile of spoil. She stopped the digger and called the local museum, and the museum called me. The first two bones we found after I got here were a moa cranium and an eagle radius. I knew then we were on to something special."

Carbon-14 dating gives an age of 2,000 years at the bottom of the deposit and 800 years at the top—a snapshot of life immediately before Polynesian settlement. As well as the moa and the giant Haast's eagle (which, Holdaway informed me, could hit its prey with the force of a 35-pound concrete block dropped from an eight-story building), the site has yielded tuataras, the extinct eastern kiwi, kakapos, an extinct giant harrier, ducks, pigeons, quails, wekas (flightless rails), parakeets, snipes, and water hens, "along with tree stumps, millions of seeds, and vast numbers of land snails. Basically we have everything here but the birds singing."

These birds—even the extant ones—haven't sung in Canterbury in a long time, though this area once had *(Continued on page 94)*

It was a jungle out there a thousand years ago, far different from today's New Zealand. Based on fossils from an ancient lake, this scene hints at the lives and deaths of predators and their hapless prey. An extinct Haast's eagle—with its ten-foot

**Man and bird** first came face-to-face when Polynesian settlers arrived around A.D. 1300. For the birds it proved disastrous. Giant moas—lesembling this model staring down paleoecologist Richard Holdaway—were hunted to extinction in just a hundred years. Kiwis, with feathers more like fur, became cloaks for the settlers (model,

MOA MUSEUM

BY [illegible] SCHOUTEN

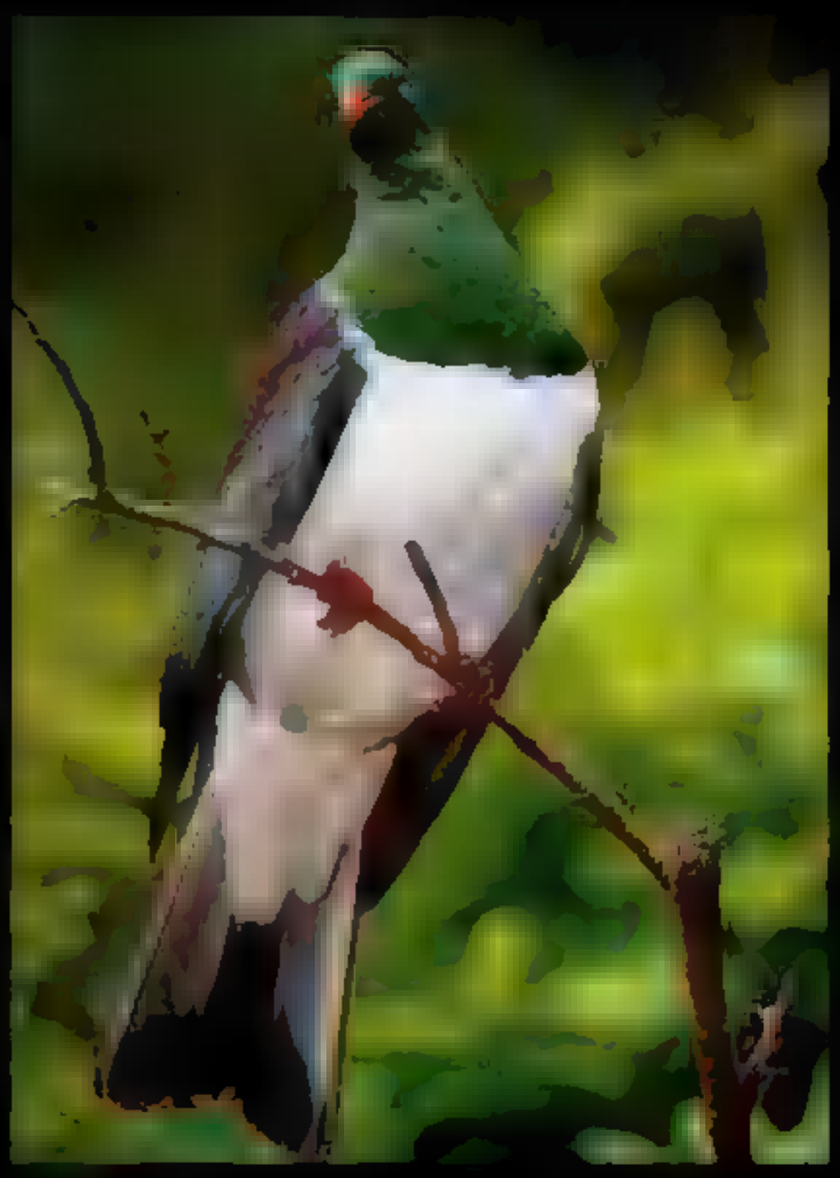
wingspan the largest eagle ever known—pounces on a moa under siege by keas, aggressive parrots that still survive. In a team that reflected new thinking on moa posture, a moa, left, sounds an alarm while an adzebill, right, awaits a scavenged meal.

An endemic fern blossoms where glaciers once filled valleys at the bottom of the South Island. New Zealand's largest species of filmy fern (left), which grows up to 1.5 feet high in moist forests, seems to drip with tiny spores at the edge of its fronds. The

southern rata (center), a 50-foot tree with rich red flowers, has suffered from the munching jaws of the introduced Australian brushtail possum. A study in contrasts, a rare kakapo feather (right) rests on a bed of common mosses, liverworts, and ferns.

# On the wing

or on the ground, birds tell the story of New Zealand. Isolated for 80 million years, this island redoubt was colonized by only the most intrepid avian explorers, which then flourished in the absence of mammalian predators. Now many have fallen victim to introduced mammals. Others have adapted to the presence of humans.



The tui (opposite upper) and the New Zealand pigeon (opposite lower) feed on nectar from flowering trees and plants imported by humans. The mountain-dwelling kea (left) preys on introduced sheep, while the flightless weka (below) has been known to steal a sandwich. Such behaviors underscore these birds' adaptability in their struggle to survive.

*(Continued from page 86)* the greatest biodiversity in the country. "Look around," Holdaway said. "Tell me if you can see a single native species." I scanned the rolling farmland with its windbreaks of poplar and pine, its introduced pasture grasses and grazing sheep. A European skylark trilled.

"Maybe if you looked hard enough you might find a native caddis fly in the stream down there," he continued, "but otherwise this is an alien landscape." The pitch of his voice rose a notch. "Politicians and tourism promoters talk about 'clean, green New Zealand' as if this country were an ecological paradise. Sure, by world standards it's clean, and much of the time it's green, but it isn't New Zealand." He pointed to the bone pile. "There's the real New Zealand. I stand among its ruins every day of my working life."

RUINED, BUT NOT OBLITERATED. There are still places where the old order endures, but you have to go high into the mountains or to offshore islands. You have to go where the predators haven't.

I found a living piece of the lost world 70 miles south of Stewart Island. There, rearing out of the Southern Ocean like a clutch of granite icebergs, lie the Snares, one of New Zealand's five subantarctic island groups. Among the least modified terrestrial ecosystems on Earth, they are also a place with their own set of oddities—penguins that roost in trees and sea lions that snooze in forest glades. Although these specks of land are little more than a square mile in area, as many seabirds are said to nest here as in the whole of the British Isles.

That statistic is not so startling when you consider New Zealand's geographic situation: a 1,200-mile strip of land encompassed by ocean. This country is the world center of seabird biodiversity. Eighty-four species—nearly a quarter of the seabirds of the world—breed in New Zealand, 36 of them endemic to these shores. With a similar land area, the British Isles has 24 seabird species and no endemics.

On the Snares the commonest seabird is the titi, or sooty shearwater. Titis are impressive fliers, migrating from their breeding islands in the Southern Hemisphere to subarctic waters between Japan and Alaska and back again each year—in the case of the Snares birds a round-trip of some 15,000 miles. They are also accomplished divers, hunting small fish to depths of 130 feet. Adult titis will travel 1,100 miles to a productive feeding area. Chick-rearing parents, which alternate between foraging and nest minding, spend as many as 11 days at sea each trip.

But their navigational prowess is their most astonishing trait. A titi returning to the Snares must first find the islands, then figure out which part of the uniformly gray-green forest of tree daisies contains its burrow, then crash-land through the canopy, avoiding the hundreds of neck-snapping V-shaped slots created by branches pointing skyward like booby traps. Then the bird must correctly locate the entrance to its burrow in order to receive an enthusiastic welcome from its mate and not the angrily snapping bill of a stranger.

To get the full impact of a couple of million birds coming in from sea and announcing "Honey, I'm home," I decided to spend a night in the open, on top of their underground condominiums.

The ground was cooing under my feet as I set out in the early evening, picking my way across the springy crust of peat that forms the forest floor. I walked like a person crossing a frozen pond, testing my weight with each step—and with good reason, for all that covers the

## Beak shapes

**reveal sex—and teamwork—for the extinct huia. Short-billed males hacked away tree bark, letting females with long, curved bills retrieve insects. Wiped out by humans, huias might have survived on an offshore refuge like the Snares Islands, home to wheeling sooty shearwaters (opposite).**

CANTERBURY MUSEUM, CHRISTCHURCH

**Lying low** after returning to his colony on the Snares Islands, a southern Buller's albatross awaits his mate, which will return later with other females from wintering grounds an ocean away near Chile. Their ground nest attests to centuries without land predators.

subterranean city of seabird burrows is a thin mat of soil and tree roots. A misjudged step can send you crashing through on top of some unsuspecting bird. Once or twice that happened, and I had to kneel down and perform a hasty reroofing job, using twigs as rafters and broad tree-daisy leaves as tarpaulins. Patting down a new peat layer on top, I would set off again, sidestepping sleeping sea lions and pausing to watch the ceaseless traffic of penguins padding like hobbits along forest trails.

I found a flattish area between burrow entrances and unrolled my sleeping bag. There was hardly a twig or leaf on the soil. All detritus is dragged below ground and used as nesting material. I propped a stout cudgel nearby, in case a sea lion should blunder into my campsite, and started taking notes.

*10.15 p.m. It's nearly dark, and all around me titi are crashing through the branches and thudding to the ground. Amazingly, they don't seem to hurt themselves. They get straight up and walk to their burrows. What a racket, though! They sound like a cuckoo speeded up and put through a distortion filter: Ah-hoo, ah-hoo! Ah-haa, ah-haa! Ah-hee, ah-hee!*

*11.05 p.m. I'm shining a torch on a bird that is only a foot away from me. It has bright black eyes and a slender grey beak. The plumage is many shades of charcoal, grey and black. I can reach out and stroke its feathers.*

*Midnight. The noise is dying down at last. A few diving petrels are coming in, with the same swoosh-crash-thud approach. One lands beside my head. It is tiny, and has blue legs and feet.*

*3.55 a.m. The birds are preparing to take flight again and look for food, so for the past hour the noise has been building up and now it's deafening. The pairs must be saying their goodbyes. They are moving towards the take-off areas, walking right over my sleeping bag. I'm going to follow them.*

*4.15 a.m. It's just light enough to see. The birds are streaming from all directions to their ramps and launching spots. There's a lot of jostling in the queues. It's like rush-hour on the freeway. Some birds flap their wings rapidly to warm up their flight muscles. If they don't get a good take-off they run across the water, flapping like crazy until they get enough lift.*

By dawn the forest was empty, the soil as bare and smooth as if the cleaners had been in. Unless you had seen it, you would have no inkling of what had taken place during the night.

ISLAND SANCTUARIES such as the Snares —some naturally free of introduced predators, some cleared of intruders by strenuous human effort—have been the salvation of New Zealand's endemic flora and fauna. Three hundred and thirty islands of ten acres or more dot the coastline, along with countless smaller islets and rock stacks. The Department of Conservation manages 220 of them as reserves.

Recently predator-control techniques have reached a level of effectiveness that allows areas of the mainland to be managed as ecological islands—a concept that was beyond the dreams of biologists even two decades ago.

One such island lies within mountainous Te Urewera National Park, 821 square miles of native forest near the eastern fin of the fish-shaped North Island. A three-square-mile peninsula jutting into Lake Waikaremoana has been protected by rat and stoat traps set across its base, and these catch most predators. For the past ten years biologist John McLennan has been establishing and studying kiwis there.

I joined him as he tracked Chick 52 down the side of a cliff, across a stream, and into thick fernery and scrub beside the lakeshore. With his radio telemetry aerial held aloft, he looked like an errant TV repairman seeking better reception. The pips on the receiver grew louder, and I knew we were closing in on the six-week-old kiwi. Laying down his equipment, McLennan reached into a clump of toe-toe, a native grass, and withdrew a furry, pear-shaped bird the size of a hamster, with two very big feet.

Taping its scaly ankles together—carefully avoiding the aspirin-size radio transmitter attached to one of them—McLennan hoisted the kiwi on a spring balance and read the weight: a shade over 20 ounces.

"Forty days to go before it's safe," he said, passing the bird to me to hold. Kiwis need to reach one and three-quarter pounds before they can be considered off the stoat menu. With the birds putting on weight at a rate of a fifth of an ounce a day, that's a long and worrying adolescence.

But so far the scheme seems to be working. McLennan has between 50 and 60 kiwis on the peninsula now, and in the last breeding season he lost hardly any chicks to predators.

**A kaleidoscope of kelp** swirls at the edge of the Snares Islands, blurring the line between land and sea ecosystems. This bull kelp, one of the world's largest species, grows across the subantarctic zone from New Zealand to Argentina and Chile. Remarkable for

its strength, bull kelp clings to coastlines in surf that would crush a boat in minutes, while its honeycomb structure gives ▪ the buoyancy to stretch and float. The kelp can hide Hooker's sea lions, which like to snack ▬ unwary Snares crested penguins, background.

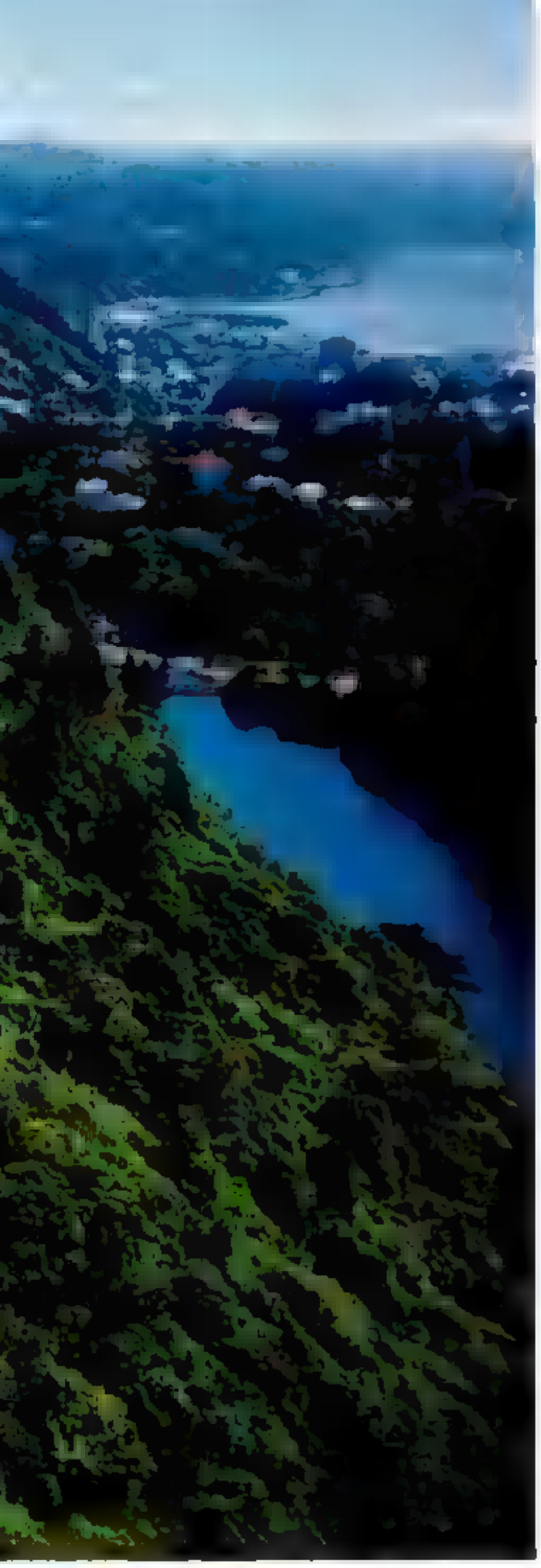
For McLennan and his co-workers, one of the most satisfying aspects of the project has been the support they have received from the nearby predominantly Maori community. Locals have helped build a fenced enclosure where the kiwis can be relocated should a plague of stoats somehow breach the defenses, and schoolchildren have started worm farms to help feed the kiwis and have donated hens' eggs to bait the stoat traps (stoats can't resist eggs).

At one community meeting McLennan described the kind of restored ecosystem he envisaged the peninsula supporting in years to come. At the end of the meeting a Maori *kuia*—an elder—came up to him and said, "Yes, that's how I remember it when I was a girl."

"I think that was when it hit me that we really can turn the clock back in this country," McLennan told me. "We have the technology. It's just a dollar issue, and that comes down to personal commitment and political will."

Looking at the shaggy bundle cradled in my arms, wiggling its little vestigial wing stumps and giving an occasional snap with its tweezer-like bill, I felt like saying, "Where do I sign?"

CHILDREN IN NEW ZEALAND grow up learning two bird stories. One involves a wren, a cat, and a lighthouse keeper, and it happened over a century ago on Stephens Island, at the northern tip of the South Island. The wren was one of only four flightless songbirds in the world (two of the others were also New Zealand wrens). The cat caught several of the little brown birds and brought them to the lighthouse keeper's house. The keeper, whose name was Lyall, sent them to local and overseas museums to be identified. By the time the wren had been named, the cat had stopped catching them. There were no more to be caught. Lyall's wren was extinct.



**Drawing a line between invaders and native species, ■ fence protects the endemic fauna of the Karori Wildlife Sanctuary in Wellington. Humans, though, are invited to visit. Conservation manager Raewyn Empson holds a ferret ■■■ to ■■■■ with ■ retriever, which will lead the hunt for ferrets, rats, cats, or possums that sneak inside the fence. An ark within an ark, Karori is one of New Zealand's vital havens for species on the brink.**

The other story involves a robin, a wildlife officer, and a brewery. In 1979 the Chatham Island black robin had dwindled to a population of just five birds, of which only one female, named Old Blue, was a viable breeder. Wildlife officer Don Merton, a pioneer of threatened species work, devised a daring strategy to save the bird. As a child Merton had fostered goldfinch nestlings to his grandmother's canary. He tried a similar trick on the Chatham Islands, giving Old Blue's eggs to tomtits (another type of robin) to incubate. It worked. The tomtits accepted the eggs, and Old Blue kept renesting and producing more.

The really remarkable thing was that Old Blue was nine years old when she started breeding, and black robins normally don't live beyond the age of five or six. When she died at age 13, having produced 11 chicks, her death was announced in the New Zealand Parliament. Old Blue had saved her species.

And the brewery? Chatham Islanders, tough farming and fishing people and not the sort you'd expect to fall in love with an endangered bird, adopted the black robin as a mascot. They named their local beer—along with a shipping company and a rugby team—after the bird.

Robins and wrens. Conservation in New Zealand will continue to be a mixture of the two with, we hope, victories edging out defeats in the ecological battle. Who knows, one day even kakapos may return to some of their former haunts, finding new homes on mainland islands. I like to think so—to imagine some child of the future wakening in the night to the sound of distant booming, the heartbeat of an ancient time. □

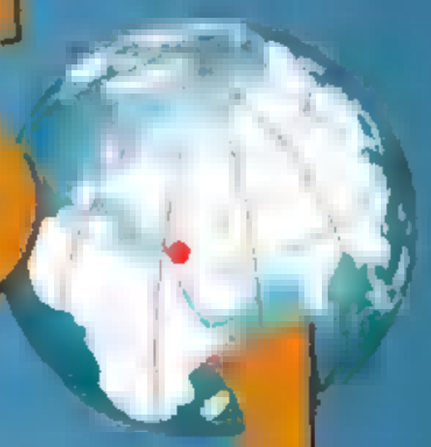
**OUR WEBSITE**

Hear the calls of New Zealand's birds, view more images by photographer Frans Lanting, and read behind-the-scenes stories ■ **nationalgeographic.com/0210.**

IN FOCUS


BY ANDREW COCKBURN

# Lines in the Sand



## Deadly Times in the West Bank and Gaza

MEDITERRANEAN SEA

ISRAEL

WEST BANK

Judaean desert

Dead Sea

JORDAN

EGYPT

GAZA STRIP

Ashdod

CITY LIMIT (See page 111)

JERUSALEM

Bayt Liqya

Givat Ze'ev

Jerusalem Airport

Ar Ram

Jericho

Anata

Good Samaritan Inn

Maale Adummim

Al Ayzariyah

Abu Dis

Ubaydiyah

Bethlehem

Bayt Jala

Bayt Sahur

Herodium

Surif

Efrata

Bayt Ummar

Bayt Fajjar

Kharas

Bayt Awla

Halhul

Sir

Ash Shuyukh

Idnah

Taffuh

Hebron

Qiryat Arba

Cave of the Patriarchs

Bani Naim

Dura

60

Yattah

As Samu

Az Zahiriyah

GREEN LINE

An Nazlah

Bayt Hanun

Gaza

Jabaliya

Dayr al Balah

Al Qarara

Bani Suhaylah

Rafiah Yam

Abasan

Khirbat Ikhzaah

Rafah

Gaza International Airport (closed)

## WHO'S IN CONTROL

AREA A: full Palestinian control

AREA B: joint Israeli-Palestinian control

AREA C: Israeli civil and military control

These areas of control, established by the Oslo peace agreements, now mainly on paper. This spring Israel asserted total military control over the West Bank.

## POPULATION

Palestinian refugees in camps

Palestinians in the West Bank and East Jerusalem number 2.3 million, with 1.1 million more in the Gaza Strip; more than half are under the age of 20—meaning they've lived their entire lives under Israeli occupation. Living among them are 383,000 Jewish settlers. Nearly half the Palestinians in these territories live in refugee camps. Neighboring Arab countries shelter an additional 2.5 million Palestinian refugees.

## SETTLERS

For reasons ranging from ideology to security concerns, Israel has systematically populated Arab lands it occupied in the 1967 Six Day War. Today 150 Israeli settlements dot the West Bank and Gaza Strip, with a dozen more in annexed East Jerusalem. Since the Oslo Accords were signed in 1993, the number of settlers has increased by just over 50 percent.

## ROADS

Israeli road

57 Other road

Western highways—700 miles of them—link West Bank Israeli settlements to Israel and to each other. Arab movement is controlled by Israeli army checkpoints. Five east-west highways subdivide Palestinian areas while providing settlers with easy commuting to Israel.

## AQUIFERS

A third of Israel's water supply is drawn from aquifers underlying the West Bank. Most have been strictly controlled by Israel since 1967. With permits for wells hard to obtain by Palestinians, per capita water consumption is a fifth of that consumed by Israelis.

## ARCHAEOLOGICAL SITES

Scattered throughout this crossroads of ancient civilizations are hundreds of archaeological sites, including many with religious—and political—significance for Jews, Christians, and Muslims. Sharing sovereignty of such sites is one small but vexing issue facing peacemakers.

## PALESTINIAN REFUGEES

Beirut

Shatila

Burj al Barajnah

LEBANON
384,918
(215,653)

Damascus

Subaynah

Ayn al Hulwah

Khan ash Shaykh

Qabr as Sitt

Burj ash Shamali

Ar Rashidiyah

SYRIA
396,248
(110,597)

GOLAN HEIGHTS

ISRAEL

Irbid

Al Hisn

Jenin

Suf

Tulkarm

Jarash

Az Zarqa

Balatah

Al Baqah

Marka

Ammar

New Amman

Jabal Husayn

JORDAN
1,662,227
(291,244)

GAZA STRIP
865,242
(463,547)

Jerusalem

Beach

Nusayrat

Dayr al Balah

Jabaliya

Al Burayj

Shaykh al Maghazi

Khan Yunus

Rafah

3,926,787 Registered refugees

(1,864,601) Refugees in camps

0 mi 25

0 km 25

NG MAPS

# Despite their hold on the world's attention,

the Gaza Strip and West Bank territories, occupied by Israel since the Six Day War in June 1967, cover relatively tiny areas. Gaza, home to 1.1 million Palestinians and 7,000 Israeli settlers (who occupy 25 percent of the land), is only 26 miles long. A north-south drive through the center of the West Bank on Road 60, which connects the historic cities of Jenin, Nablus, Bethlehem, and Hebron, takes four hours. Traversing one of the modern east-west highways that cross between the Jordan River and the so-called Green Line, which marks the West Bank's border with Israel, should take 30 minutes.

But for most of the people who live here, time and distance are measured differently. The 2.2 million Palestinian inhabitants of the West Bank and East Jerusalem are effectively barred from most of Road 60 along with many other roads carefully engineered for the use of the 376,000 Israelis who have settled here over the past 35 years. Palestinians contemplating the 25-mile journey from Ramallah to Jericho, for example, must be prepared to spend an entire day, sometimes days, negotiating the various Israeli roadblocks and checkpoints along the way.

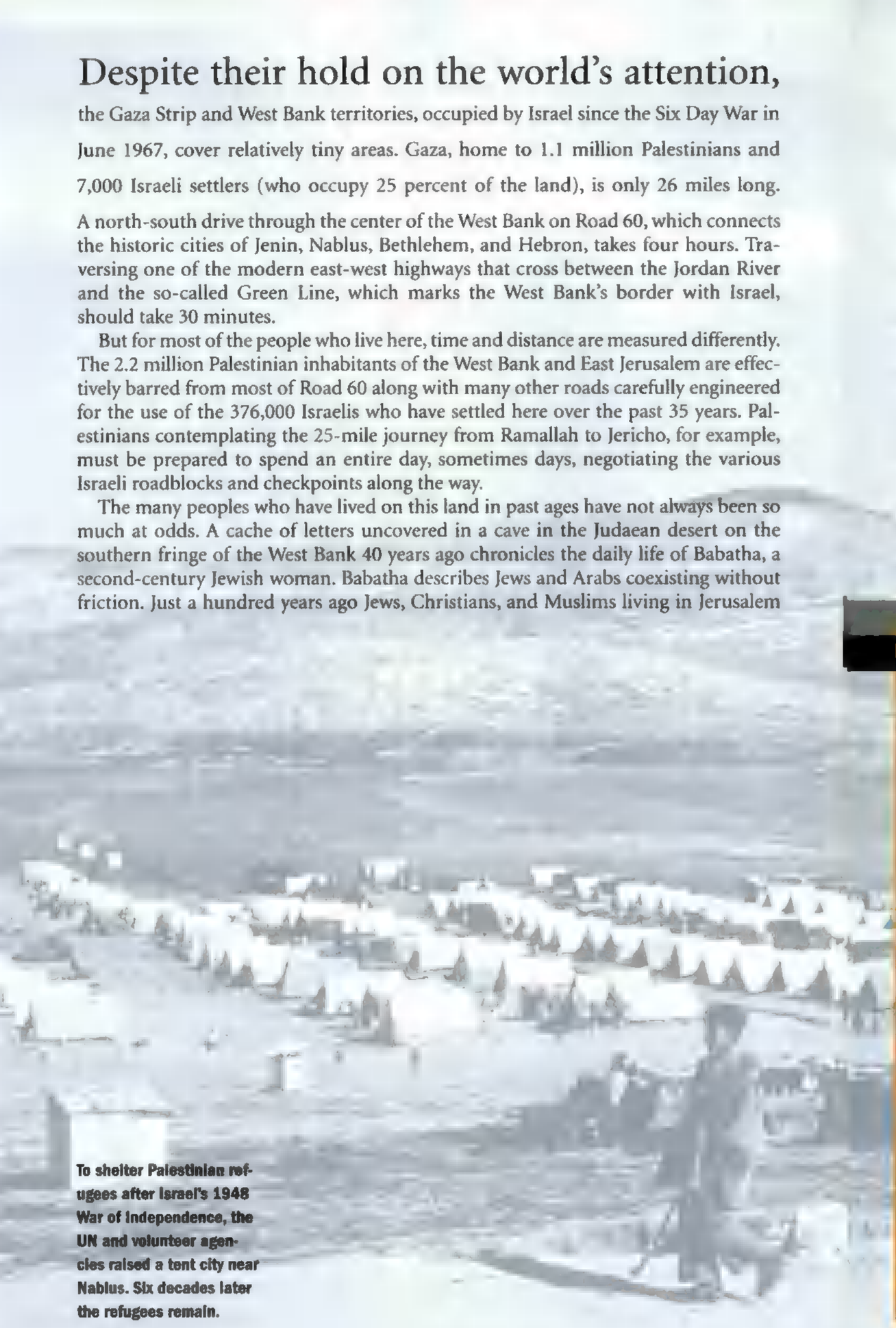
The many peoples who have lived on this land in past ages have not always been so much at odds. A cache of letters uncovered in a cave in the Judaean desert on the southern fringe of the West Bank 40 years ago chronicles the daily life of Babatha, a second-century Jewish woman. Babatha describes Jews and Arabs coexisting without friction. Just a hundred years ago Jews, Christians, and Muslims living in Jerusalem routinely attended each other's religious festivities. That kind of harmony eroded and disappeared in the 20th century with the rise of nationalism—Jewish and Arab—in the region.

Escalating hostilities led to intervention by the United Nations, which, in 1947, produced a plan for the partition of the area, named Palestine, between the Mediterranean Sea and the Jordan River. The plan awarded slightly more than half the land to a Jewish state with the remainder allotted to the Palestinians. Although the Jews accepted the plan, Palestinians and the Arab states rejected it.

The following year, on May 14, Israel declared independence, offering itself as a haven from anti-Semitism for the world's Jews. An ongoing war between Jews and Palestinians was thereupon joined by neighboring Arab states. When the war ended in January 1949, Israel controlled 78 percent of Palestine, and 750,000 Palestinians became refugees.

The territory known as the West Bank—the hill country to the west of the Jordan River—had been designated under the stillborn UN scheme as the heart of the Palestinian state. During the war Jordan occupied this area while Israel focused on protecting early settlements and capturing Jerusalem. When the war was over, the West Bank and East Jerusalem were in the hands of the Jordanian forces; Egypt controlled the Gaza Strip; Israel controlled West Jerusalem.

Nineteen years later, in the 1967 Six Day War, Israeli forces speedily overran Gaza and swept across the West Bank, establishing a new frontier for Israel on the Jordan River. While the Israelis annexed East Jerusalem, they were less certain about what to do with the rest of the newly occupied West Bank and its million or so inhabitants. Although some Israeli leaders favored granting limited self-government to the more densely populated Palestinian areas, others were determined to settle Israelis amongst the Palestinians. Their aim was to make it impossible for any future Israeli government to



**To shelter Palestinian refugees after Israel's 1948 War of Independence, the UN and volunteer agencies raised a tent city near Nablus. Six decades later the refugees remain.**

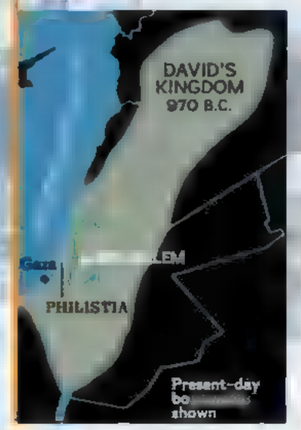
JOHN SCOFIELD

## IN THE [illegible]

### 1000 B.C.

**Israel of King David**

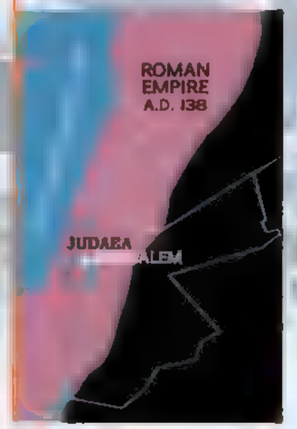
According to the Bible, Joshua led the Israelites into lands west of the Jordan River, where they routed the Canaanites but failed to win Gaza from the Philistines. King David expanded Israel and built his capital around the ancient sacrificial altar on Mount Moriah in Jerusalem. There his son Solomon built a grand Temple to God. Later Israel split, and its pieces fell: to Assyria in 722 B.C. and to Babylon in 586 B.C., when the Temple was razed and the Israelites sold into slavery.




### 63 B.C.–A.D. 395

**[illegible] of the Roman Empire**

Rome administered this land as a provincial backwater, content to leave Judaea to the governance of local monarchs—including Herod the Great, who began to rebuild Solomon's Temple in 20 B.C. But when anti-Roman anger exploded in the Jewish Revolt of A.D. 66, the empire came down hard. Rome sent legions to crush the rebels, the Temple was destroyed in 70, and the Jews dispersed. From then on Rome labeled the region Syria Palaestina, or Palestine.




### 500

**Oldest Map of the Biblical World**

Uncovered in Madaba, Jordan, a mosaic in a sixth-century church shows the walled city of Jerusalem at the center of the Byzantine world. Inheritors of the Holy Land after the division of the Roman Empire in 395, the Christian rulers of the Byzantine Empire built churches throughout the region to sanctify important sites in the life of Christ. When Muslims conquered these lands, such churches were often turned into mosques.

ARCHIVE STUDIUM BIBLICUM FRANCISCANUM, JERUSALEM

pull out from what they proclaimed to be Israel's land by divine right.

Initially such Israeli settlements—then as now illegal under international law—were few and sparsely populated. By 1977 there were only 4,500 Israeli settlers in the West Bank (with another 50,000 in East Jerusalem). But following election of the conservative Likud Party government that year, the settlement drive went into high gear. Among other initiatives to clear land for this purpose, the new Israeli government declared that established landowners unable to produce legal title (which most Palestinians in the West Bank did not possess) could have their holdings seized as state land.

To encourage settlers to move from Israel or abroad to the settlements, successive Israeli governments offered generous subsidies, such as tax breaks and cut-rate mortgages. Even for those not drawn by visions of occupying the biblical land of Israel, these were attractive inducements. Living in cheap and commodious housing, inhabitants of the larger settlement

| [illegible] | 1516-1917 |
|---|---|
| **Crusader Invasion**<br>Taking advantage of a weakened Byzantine Empire, Arab armies conquered Palestine in the seventh century A.D. they spread Islam to the Mediterranean and beyond. Four centuries later, Pope Urban II raised a Christian army of some 35,000 and sent them a crusade to recapture the Holy Land from the Muslims. After a three-year march from Europe, the crusaders besieged and finally conquered Jerusalem in 1099 (painting, below). Their hold the Holy City lasted less than a century. | **Province of the Ottoman Empire**<br>During Ottoman rule, the inhabitants of Palestine experienced prosperity and modernization, they also suffered at the hands of corrupt and negligent local officials. In the late 19th century Jewish immigrants from Europe and Russia began moving to Palestine, buying land and building farming communities. As their numbers grew, some Jews, known as Zionists, dreamed of establishing a modern Jewish state in the land of King David. |

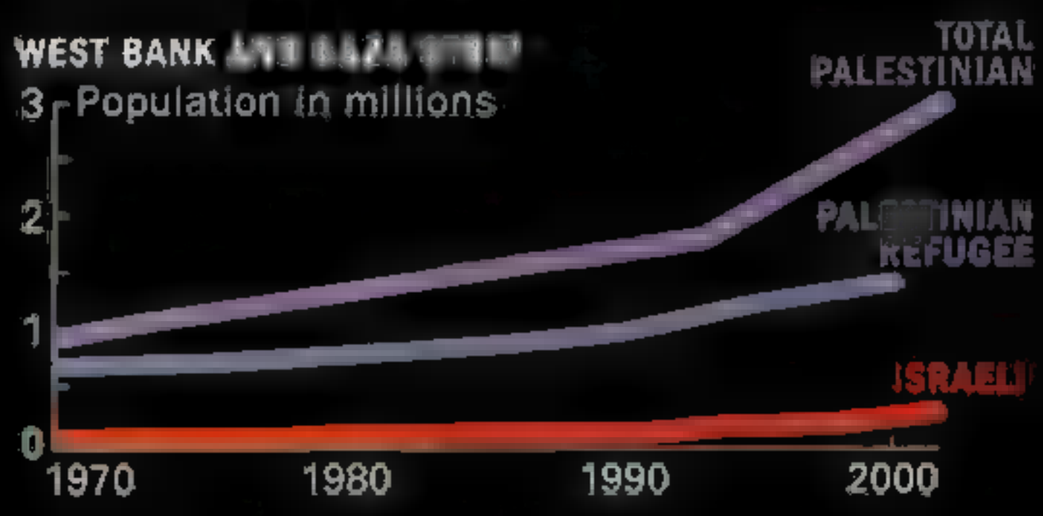
KONINKLIJKE BIBLIOTHEEK, THE HAGUE


# THE NUMBERS

## SPECKS OF LAND, SEEDS OF CONFLICT

The lands at heart of this struggle small but With a lation of 6.6 million more than a million Arabs), Israel is dwarfed by Arab countries. The West Bank covers an of 2,260 square miles, the size of Delaware. Only 27 percent of that land is arable. In the Gaza Strip a million people are into a desert corridor four miles


## POPULATION




## AGE

| | | | | Median age |
|---|---|---|---|---|
| WEST BANK | 44.5% | 52% | 3.5% | 17 |
| GAZA STRIP | 50% | 47.5% | 2.5% | 14 |
| ISRAEL | 27% | 63% | 10% | 28 |

Age in years 0-14 15-64 more than 64

## BIRTH/DEATH

| | | | Growth rate |
|---|---|---|---|
| WEST BANK | 36 | 4.5 | 3.5% |
| GAZA STRIP | 42.5 | | 4% |
| ISRAEL | 19 | | |

Births (per 1,000 people per

## ECONOMICS

| | GDP per | |
|---|---|---|
| WEST BANK | | |
| GAZA | | |
| ISRAEL | | 9% |

*These 2001 are the most recent available, but March 2002 military restrictions and curfews have at times increased Palestinian unemployment 60 percent or more, virtually shutting down all economic

blocs close to the Green Line could enjoy a comfortable suburban lifestyle within an easy commute to jobs inside Israel itself. According to the Israeli human rights organization B'Tselem, 42 percent of the land in the West Bank is now controlled by the settlements.

By 1993 more than 115,000 Palestinians were commuting to jobs in Israel and earning higher wages than they would have in their traditional occupations as farmers, traders, or artisans. However, around the same time, the Israeli government, responding to Palestinian attacks on Israelis, began placing severe restrictions on these workers' mobility, to the detriment of the Palestinian economy.

Israel, in turn, was becoming increasingly reliant on the West Bank for water. A third of its entire supply was being drawn from aquifers under the highlands of the territory. Since 1967 all water resources in the territory have been put under Israeli state control. Palestinians who need to drill a well, or repair an old one, need a permit. Such permits, which require approvals from a variety of Israeli committees and departments for a single well, are rarely granted.

Today, Israelis consume five times as much water per head as Palestinians, many of whom must rely entirely on water trucked in from distant wells during the dry summer months. According to B'Tselem, inhabitants of the settlements, where swimming pools are plentiful and crop irrigation common, use even more water.

The 1993 Oslo Accords sparked the first moves by Israel to alleviate, at least partially, the effects of the occupation. Uri Savir, the chief Israeli negotiator, later wrote that it was during the peace talks leading to the Oslo Accords that he first learned that "a West Bank Palestinian could not build, work, study, purchase land, grow produce, start a business, take a walk at night, enter Israel, go abroad, or visit his family in Gaza or Jordan without a permit from us."

As part of the accords Israel agreed to

| 1922-1948 | 1947 | 1948 | 1967 |
|---|---|---|---|
| **British Mandate for Palestine**<br>As part of the settlement ending World War I, the Ottoman Empire was dismantled, and Britain governed Palestine with a League of Nations mandate. Under the British (who endorsed the Zionist vision of a national homeland in Palestine), Jewish immigration steadily increased, alarming local Arabs. Riots and terrorism erupted as both sides lashed out [redacted] each other—and the British. As pressure mounted after World War II, Britain turned to the UN for a solution. | **United Nations Partition Plan**<br>When Britain, in 1947, first declared it would withdraw from Palestine, the UN stepped in and adopted [redacted] plan calling for the partition of Palestine into two states—one Palestinian and one Jewish, with Jerusalem under UN control. Arabs throughout the Middle East rejected the plan, while Jews in Palestine rejoiced—and steeled themselves for war. After Britain announced its intention to depart in the spring of 1948, Arab-Jewish violence escalated. | **Israel's [redacted] of Independence**<br>When Britain withdrew in May 1948, Israel proclaimed its independence and the governments of Iraq, Jordan, Egypt, Syria, and Lebanon mobilized for war. Well armed and much better organized, Israel quickly gained the upper hand, repulsing the Arab [redacted] and seizing [redacted] of Palestine than the partition plan had prescribed, uprooting 750,000 Palestinians. Jordan annexed Jerusalem's Old City and the West Bank, while Egypt occupied the Gaza Strip. | **Six Day War**<br>In early 1967 Syria and Egypt appeared to be readying [redacted] attack on Israel. On June 5 the Jewish state struck first, routing Egyptian forces and seizing the Sinai Peninsula and Gaza Strip. When Jordan shelled Tel Aviv and West Jerusalem, Israel retaliated, capturing all of Arab-held Jerusalem and the West Bank. Up north, Israel captured Syria's Golan Heights. A few months later the UN passed Resolution 242, calling for Israel to withdraw from occupied territory in exchange for peace. |




withdraw its forces from the West Bank and Gaza, save those needed to guard settlements, over the course of five years, at the end of which the two sides would negotiate a final settlement leading to an independent Palestinian state.

In the interim, the territories were internally subdivided. In Area A the Palestinians had full control. Area B was under Palestinian administration with the Israelis retaining security control, while Area C remained under full Israeli control. However, each of the islands of territory under full or partial Palestinian control was divided by Area C territory, which might in some cases be a strip no more than 380 yards across—narrow enough for a tank to block. Security restrictions, progressively tightened since September 2000, have made movement to and from Palestinian enclaves ever more difficult and time consuming and, whenever the Israelis clamp down, impossible.

For a time the peace process that began in 1993 did bring an end to direct Israeli occupation in major Palestinian towns such as Nablus,

1978

**Camp David I**

At Camp David, Maryland, U.S. President Jimmy Carter brought together Egyptian President Anwar Sadat and Israeli Prime Minister Menachem Begin to forge the first peace treaty [illegible] between Arabs and Israelis. In return for peace with Egypt (including full political and economic ties) Israel agreed to return the Sinai and remove its settlements there. Sadat was under pressure to advance the Palestinian cause in this negotiation, but in the end Camp David sidestepped the issue.


1967-2002

**Extending Israel's Occupation**

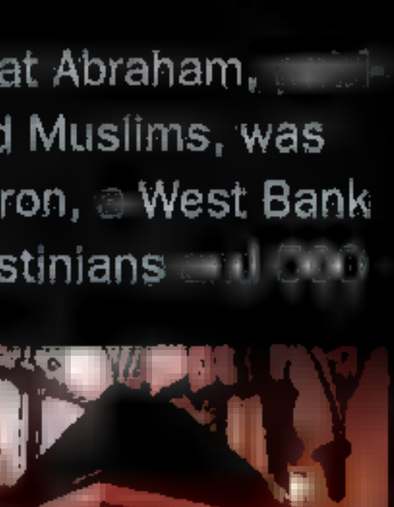
Soon after capturing the West Bank, Gaza Strip, Sinai, and the Golan Heights in the 1967 war, Israel adopted a policy designed to create settlements of Israeli civilians in these territories that would [illegible] difficult for anyone, including later Israeli governments, to [illegible]. Such activity violates principles set down by the Fourth Geneva Convention, which forbids victors in [illegible] from colonizing foreign lands seized in battle. However, every Israeli government [illegible] 1967 has expanded these settlements by expropriating Arab lands and building homes for Israeli Jews, even when Israel's leaders [illegible] negotiating for peace with the Palestinians. While [illegible] Israeli settlers [illegible] motivated by ideology, many others are attracted by government subsidies and incentives.

# SACRED PLACES

## HOLY SITES, BITTERLY CONTESTED

### TEMPLE MOUNT/NOBLE SANCTUARY

**Jerusalem** — [illegible] inspiration, or eternal strife, may arise from the hilltop known as [illegible] Temple Mount to Jews, the Noble [illegible] to Muslims. [illegible] by Al Aqsa Mosque [illegible] the Dome of the [illegible], marking Muhammad's [illegible] to heaven, the sanctuary [illegible] built on ruins of the ancient Jewish Temple razed [illegible] Rome in [illegible] 70. [illegible] by Jews for two millennia, the Temple [illegible] exposed Western Wall is the holiest site in Judaism.


ANNIE GRIFFITHS BELT

### CAVE OF THE PATRIARCHS

**Hebron** — Tradition holds that Abraham, [illegible] arch of Jews, Christians, and Muslims, was laid to rest in a tomb at Hebron, a West Bank town of some [illegible] Palestinians [illegible] Jewish settlers protected by Israeli troops. The shrine itself [illegible] Muslims and Jews, [illegible] tensions often boil over. In 1994 a Jewish settler massacred 29 Muslims at [illegible] here, fueling an explosion of hate and [illegible] continues to this day.


JOANNA PINNEO

### JOSEPH'S TOMB

**Nablus** — [illegible] by Jews as the [illegible] place of Joseph, son of [illegible], this shrine in the heart of Palestinian Authority [illegible] Israel's army from [illegible], when [illegible] assumed control of Nablus, until October [illegible], when Israeli troops pulled out under fire in the [illegible] *intifada*. Afterward, local Palestinians took out their frustrations on the [illegible] abandoned tomb [illegible] compound.


LEFTERIS PITERAKIS, WIDE WORLD

Jenin, and Ramallah, all of which experienced a brief flicker of prosperity. But by March 2002, 67 percent of Palestinians in the occupied territories were living under the poverty level of two dollars a day.

Contributing to this decline was a sense of despair that since the mid-1980s had hastened the rise of Palestinian extremist groups. With the ineffectuality of the Palestinian Authority (PA), as Yasser Arafat's administration is called, and with every setback in the peace process, these groups have grown stronger. Suicide bombers attack Israeli civilians; the Israeli military assassinates suspected terrorists and restricts the movements of Palestinians; and the cycle of violence and hatred continues.

Meanwhile, since 1993, the number of settlers on the West Bank and in East Jerusalem has risen from 247,000 to 376,000. Most of them live in three large blocs that both hem in the Palestinian cities and divide them from each other, jeopardizing the cohesion of any future Palestinian state. On the western side of the West Bank, for example, the settler city of Ariel separates the major Palestinian towns of Qalqilyah, Nablus, and Ramallah. Farther south another bloc of settlements stretches east to within eight miles of the Jordan River, cutting the West Bank in two and dividing the 200,000 Palestinians of East Jerusalem from Ramallah to the north. Southwest of Jerusalem yet another major settlement cluster sits between Bethlehem and Hebron.

In talks aimed at reaching a final agreement—in 2000 at Camp David and in early 2001 in Taba, Egypt—Israeli negotiators reportedly offered to hand over almost all the West Bank to full Palestinian control. Israelis were divided between those who resented such concessions and those who saw the settlements as an impediment to peace. In any event, Palestinian negotiators rejected the proposal, noting as their rationale that the proposed Palestinian state would be composed of disconnected parts, cut

## AGREEMENTS AND TREATIES

### KEY TO MAPS AND PROPOSALS

**The Green Line**
This pre-1967 frontier between Israel and the occupied territories provides ■ framework for negotiations. The Saudi proposal, endorsed by the Arab Summit in April, called on Israel to return to the Green Line in exchange for normalized relations.

**Area A**
Areas in which the Palestinian Authority (PA) exerts full civil and military control.

**Area B**
Areas in which the PA exerts full civil control, but shares military control with Israel.

**Area C**
Areas in which Israel exerts full civil and military control.

MAP SOURCE: FOUNDATION FOR MIDDLE EAST PEACE; JAN ■ JONG

**1993**

**Oslo I**
Meeting secretly in Norway, Israeli representatives and the Palestinian Liberation Organization (PLO)—now the Palestinian Authority (PA)—led by Yasser Arafat, agreed to recognize Israel's right to exist in return for ■ phased withdrawal of Israel from the West Bank. Israeli Prime Minister Yitzhak Rabin agreed to a five-year program leading to the creation of a Palestinian state. For openers, Jericho and most of the Gaza Strip were shifted to Palestinian self-rule (Area A), while Israel retained control of the rest.


**1995**

**Oslo II**
Against a backdrop of rising militancy on all sides, negotiators pushed on to phase two, shifting 23 percent of the West Bank to Area B, and began pulling troops from West Bank cities. (In later agreements, Areas A and B grew to 40 percent of the West Bank, even as Israel continued to build settlements in Area C.) The settlement issue—along with Jerusalem and refugees—was left for later. At ■ peace rally in November 1995, Israel's Rabin was assassinated by ■ Jewish zealot.


**2000**

**Camp David II**
PA leader Arafat and Israeli Prime Minister Ehud Barak met with President Clinton ■ Camp David, hoping for ■ breakthrough in negotiations. Talks failed to produce agreement on the proposal below; two of the stickiest issues remained the status of Jerusalem and the return of Palestinian refugees. A few weeks after the talks ended, Israeli politician Ariel Sharon visited the Al Aqsa Mosque–Temple Mount complex with Israeli police. A Palestinian *intifada*, or uprising, followed swiftly.

off from each other (and control of the water resources) and, crucially, from the vital economic center of East Jerusalem—from which Palestinians living outside the city are barred without special permission.

In March, following an onslaught of Palestinian suicide-bomber attacks against Israeli civilians, the Israeli army reoccupied many Palestinian-controlled areas and placed most of them under semipermanent curfew. The peace process, already stalled, went into abrupt reverse. Both sides now utterly distrust each other, and, even with PA elections coming in early 2003, the prospects for a Palestinian state worth the name are remote. The brighter days described in Babatha's second-century letters seem irretrievable. It's doubtful that Jews and Muslims, who only a century ago attended each other's religious festivities, will be doing so again anytime soon.

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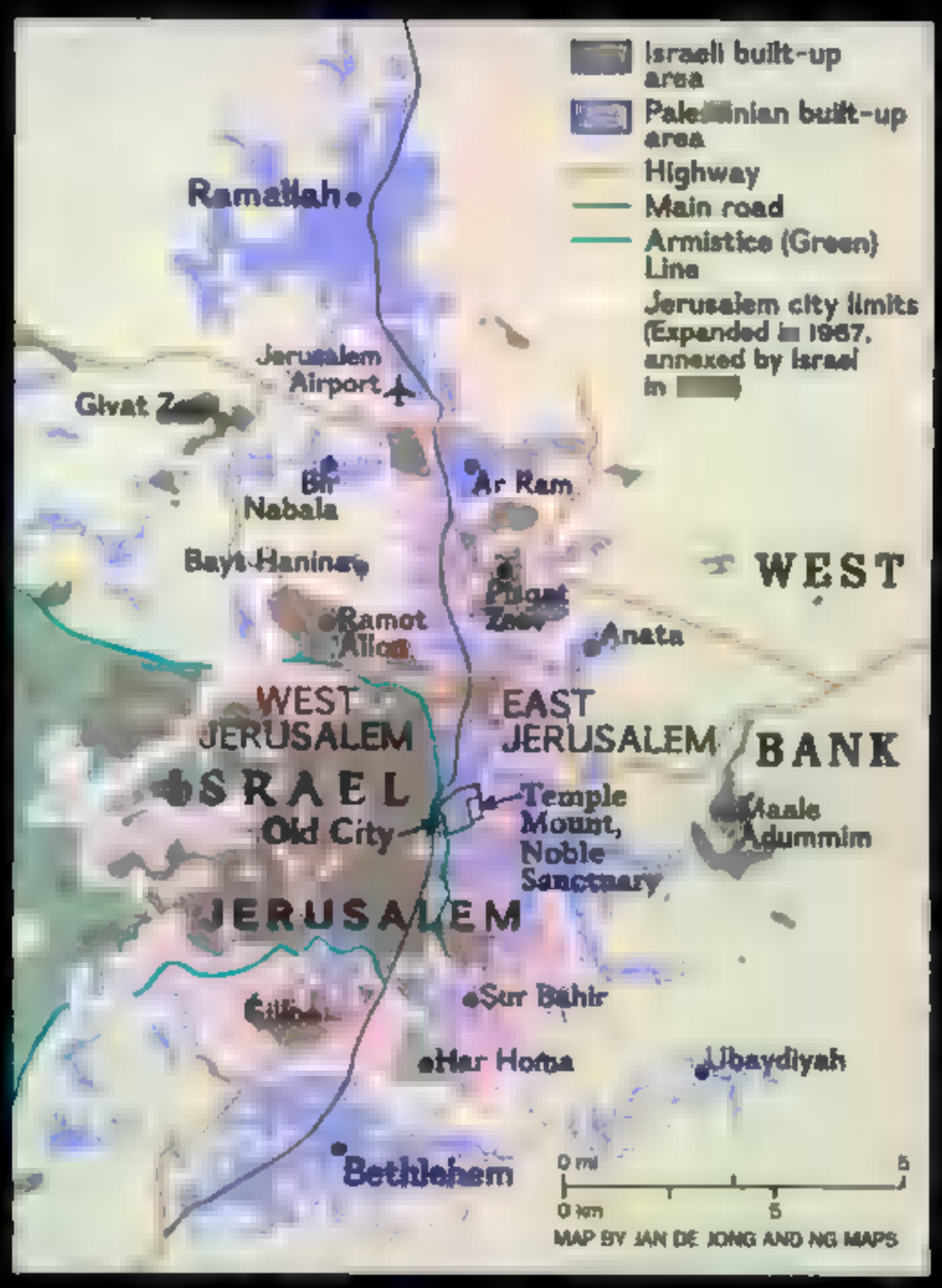
Get an updated report from the author and a list of additional resources at **nationalgeographic.com/ngm/0210**.

# JERUSALEM DIVIDED

## TWO PEOPLES, ONE CITY

Jerusalem in 1500 B.C., when the Canaanites knew it as Urusalim, this city in the Judean hills has seen a long parade of rulers. Today Israel declares Jerusalem the eternal and undivided capital of the Jewish people, while the Palestinians claim it as the holy capital of their future state. Some even dare to consider it partitioned.

Controlled by Jordan until 1967, the Old City and East Jerusalem fell to Israel on days two and three of the Six Day War. Thereafter Israel, ignoring UN calls to withdraw, set out to consolidate its hold with a tactical array of land confiscations, annexations, demolitions, and Jewish housing developments—all designed to populate, divide, and control Palestinian East Jerusalem. Today Jewish settlements have cut Palestinian areas off from each other. With its building campaign in full swing, Israel aims to create a solid bloc of Jewish settlement stretching from the Old City to Maale Adummim and east toward Jericho, making any division of Jerusalem—or a viable Palestinian state—far more difficult to achieve.




**2001**

### Taba

In January both sides met with the U.S. in Taba, Egypt, to consider a plan that would have given Palestinians a state and Israel 97 percent of the West Bank for a reduced number of settlements. Although the two sides came closer than before, they could not work out the details on Jerusalem, refugees, or Israel's refusal to give up the settlement complex west of Jericho, which splits the West Bank in two. Weeks later Barak lost his bid for reelection and Clinton was out of office.


**2002**

### The Future?

Responding to a series of terrorist attacks in the spring, Israel reoccupied the West Bank, crippling the institutions of Palestinian self-rule. Today the Areas A and B shown below exist chiefly on paper as Israel maintains military control over Palestinian cities and begins to build security barriers. The world continues to seek a solution, with PA elections scheduled for early 2003. But for now the dream of Oslo—two peoples living in peace—appears to be farther away than ever.

# Survivor of fires, sultans, and plagues, Turkey's largest city navigates economic and political shoals, and braces for the next big quake.

Ist

In decep[illegible] a fury arrives the Sea of

# On Edge

BY RICK GORE

PHOTOGRAPHS BY ALEX WEBB

Marmara. Beneath the water, tension mounts on a geologic fault—and anxiety tumbles ashore.

# Across the Ages

Boys conquer centuries-old ruins. Greeks, Romans, Byzantine


flavor this new home to more than nine million

## "Cheelay . . . cheelay . . . cheelay bülbülüm, cheelay."

**Midnight in Istanbul on a hot August night, and a cheer goes up in the Neo Bar as the voice of Turkish rock diva Burcu Güneş ululates through the smoky nightclub. All night the crowd has danced to Western pop, but suddenly all are riveted by sounds from the Turkish soul.**

The song, "Çile Bülbülüm" (Turks pronounce the ç as "ch"), is a love song, known by most from childhood. Güneş has given the music a driving beat, transforming it into a pop anthem.

"*Cheelaaaaaaaay.*" Eyes tight shut, wincing with bittersweet emotion, scores of young people begin to wail along.

"*Çile* means sorrow and trouble," one man tells me over the din. "The singer is asking her *bülbül*—her nightingale—why she must suffer so much sorrow." All these youthful Turks might well be asking the same question. For Istanbul these days is on edge: the edge between East and West, between modernity and medievalism, between secularism and Islamic fundamentalism, between one horrible earthquake and the next, between prosperity and economic collapse.

Cultural ambivalence permeates the city, creating a complexity as rich as the aromas that waft through its spice markets. Women with formfitting blouses and hemlines hovering at mid-thigh share the sidewalks of İstiklal Caddesi, Istanbul's liveliest street, with women hidden head to toe under *kara çarşaf*, Turkish for black chadors. Peasants fresh from rural Anatolia struggle to maintain the intimacy of village life while living in the shadows of


**Identity Crisis?** **Barbershop mirrors reflect a world of difference. Much of Istanbul presents a cosmopolitan face, yet two-thirds of its residents are recent migrants from Turkey's traditional countryside.**

skyscrapers teeming with ambitious, globe-trotting stockbrokers who drive Mercedes-Benz convertibles.

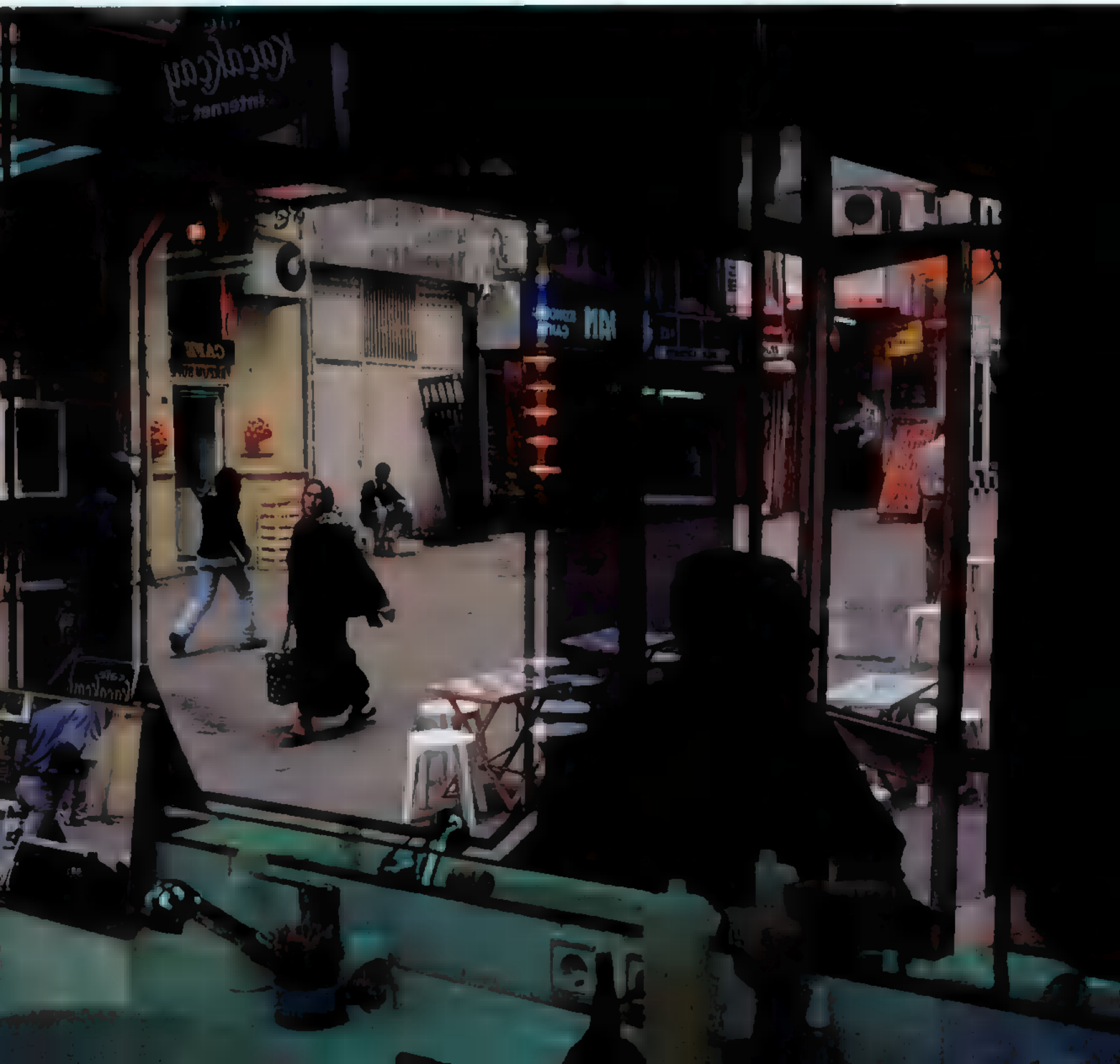
Five times a day muezzins call the faithful to prayer from minarets throughout the city. Yet after midnight on a weekend the heart of Istanbul throbs with a nightlife both boisterous and profane.

Now an economic upheaval has hit the city. Many of the dancers and drinkers in the Neo Bar watched their jobs vanish last year when a devaluation of the Turkish lira plunged the country into a depression. Those still employed find the buying power of their salaries cut almost in half.

Why so much çile? Why for so long? Nightingales aren't exactly abundant here anymore, but I'll search for one in other voices—like those in the Neo Bar, where another beer and another "*Cheelaaaaaaaay*" on this Saturday night help take the edge off the edgy lives Istanbulians are living.

ISTANBUL BRIDGES the tectonic edge between Europe and Asia, an edge defined by the shimmering Bosporus strait. Two-thirds of Istanbul's population lives in Europe, to the west of the seaway; the rest lives to the east in Asia. A cruise along the split between two continents seems an apt way to view this city, divided in so many ways.

I board the supertanker *Stemnitsa* with Cahit İstikbal, one of 50 Turkish pilots who navigate large vessels through the treacherous waters of



the Bosporus. The ship, which began its journey at a Russian port across the Black Sea, will enter the northern entrance of the strait, sail 18 miles into the Sea of Marmara, then travel on to the Mediterranean.

As *Stemnitsa*'s immense, rusty prow slices southward, layers of Istanbul's history glide past. The city was known as Byzantium at its birth around 660 B.C., then as Constantinople after Constantine moved the capital of the Roman Empire there in A.D. 330. By the time the Turkish conqueror Mehmed II seized the city in 1453 and made it the seat of the Ottoman Empire, it was known locally as Istanbul.

We sail past Rumeli Hisarı, Mehmed's imposing fortress on the western shore, and moments later the modern skyscrapers of central Istanbul rise beyond it. Traffic streams across the two great suspension bridges that span the Bosporus, carrying close to half a million people each day from continent to continent, from home to work and back again.

After we pass beneath the second bridge, a full panorama of urban Istanbul spreads out on the European shore: glass-and-steel office buildings, graceful mosques, 19th-century Ottoman palaces, and densely packed, tile-roofed apartment buildings. Ferries filled with commuters crisscross between the hectic terminals at Üsküdar in Asia and Beşiktaş, Karaköy, and Eminönü in Europe. The European side of Istanbul is split by another fabled waterway, the Golden Horn. On the historic peninsula south of the Galata Bridge, which crosses the horn, lies the oldest part of Istanbul with narrow, teeming streets and the city's most famous monuments: the Blue Mosque, Hagia Sophia, Topkapı Palace, and the grand, elegant Süleymaniye Mosque.

The Bosporus is calm on this day, and our passage relaxed. But it's not always so. The strait is less than half a mile across in some places, and strong shifting currents, unpredictable weather, sudden fogs, and sharp turns can make these waters hazardous.

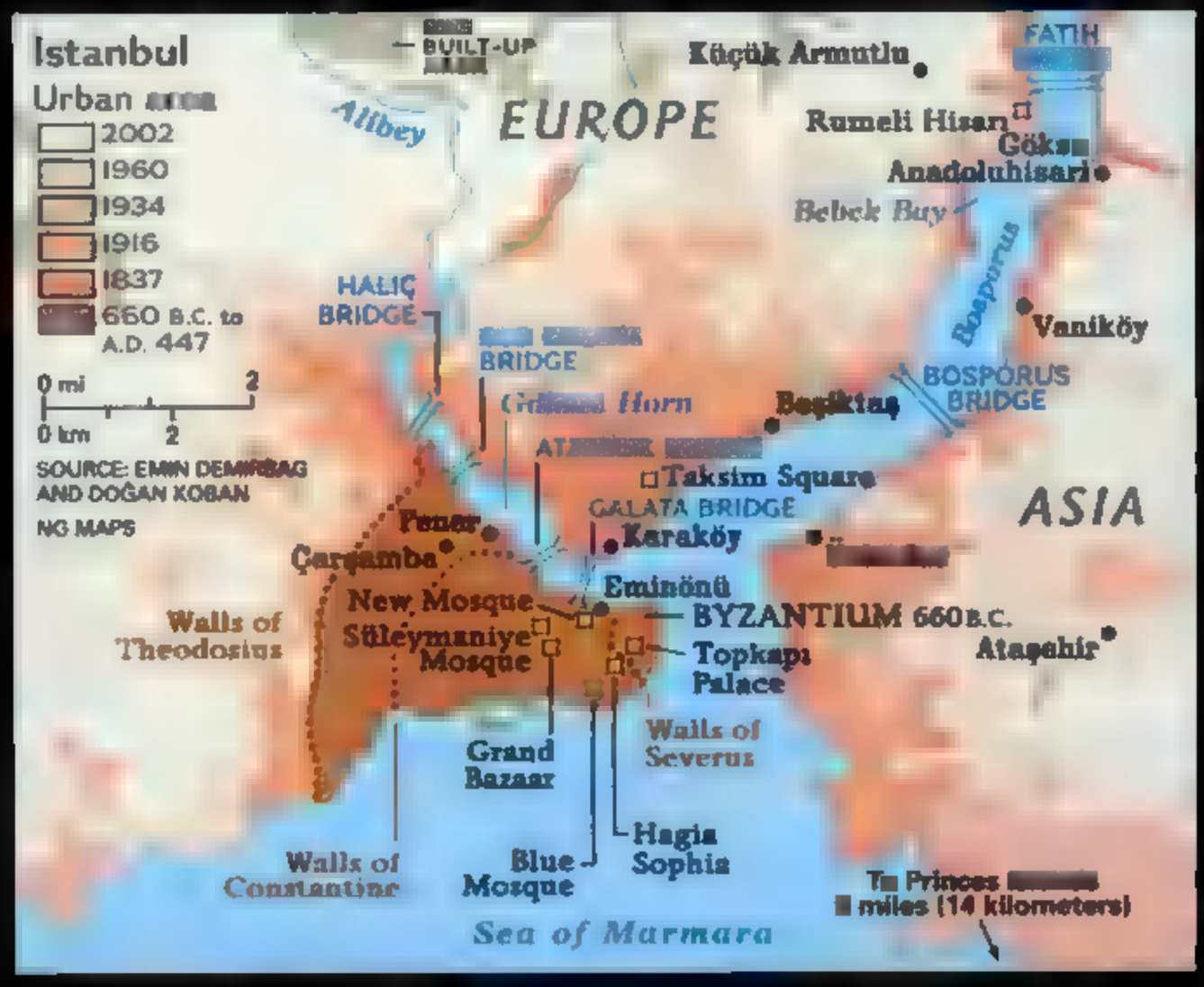
More than 130 large vessels pass through the Bosporus each day, many carrying crude oil—as does *Stemnitsa* right now, some 130,000 tons of it—or toxic chemicals such as ammonia. Both the number of ships and the volume of dangerous cargo are rising rapidly, increasing the chances of a catastrophe.

"It takes about seven miles to draw a ship of



# Expanding Metropolis

On a thumb of land at the confluence of the Bosporus and the Golden Horn [illegible] around 660 B.C. [illegible] vital, the peninsula [illegible] a [illegible] for rival [illegible]. In A.D. [illegible] Constantine made [illegible] city the [illegible] of the Roman Empire and it became [illegible] as [illegible]. Expansion continued across the [illegible] today [illegible]


carries traffic between the and the shore. Through the the city, bul in 1930, also the into Asia. world's that sits two continents.

## The city stunned me with its humanity,

this size to a halt," says İstikbal. "It's like sliding on ice. You don't have good control; you don't know exactly what you will do if there's a problem. With dangerous cargo, the fear is not just for myself. In an extreme case, say an accident with a tanker carrying ammonia, the gas could kill everyone for 15 miles in all directions."

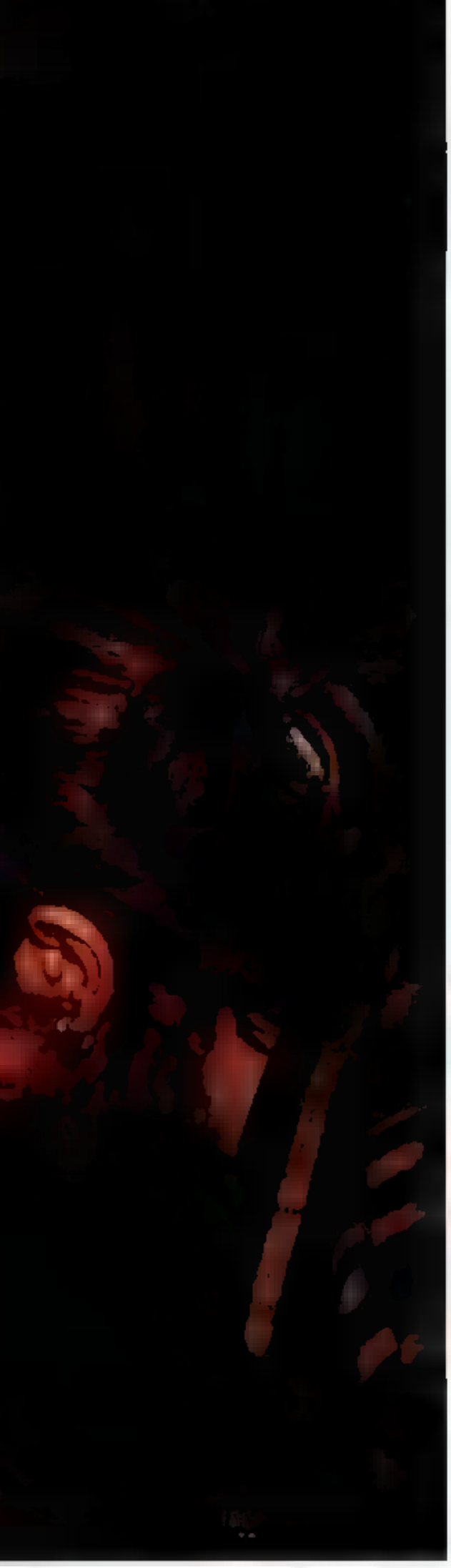
Accidents do happen. In 1994 a collision between a tanker and another ship in the strait killed 28 seamen and released 20,000 tons of crude oil into the Bosporus. In another accident 20,000 sheep drowned. Ships also have plowed into homes and quays along the shore.

*Stemnitsa* makes today's trip without incident. But İstikbal's words trigger thoughts of a different sort of collision. When the ship enters the Sea of Marmara, it will pass directly over the North Anatolian Fault.

"DEPREM . . . DEPREM," frets Emine Biçer, a 65-year-old widow. "Deprem" is one Turkish word I recognize. It means earthquake.

It was an earthquake that first drew me here. In the heat of an August night in 1999, a magnitude 7.4 quake on the North Anatolian Fault, one of Earth's most active, struck near İzmit, just 60 miles from Istanbul. It killed almost 20,000 people and caused billions of dollars' worth of damage to Turkey's industrial heartland. The emotional aftershock persists, heightened by warnings that a catastrophic quake could well strike Istanbul dead-on in the next few decades.

Emine Biçer is afraid to leave her family to visit her hometown on the Black Sea, her son Şakir tells me. I've joined them for breakfast in




**Prepared for Battle** A gilded leather breastplate [illegible] a model for her runway assault. Not far away, in the Küçük Armutlu neighborhood, police raided a community where hunger strikers were protesting prison conditions in Turkey; fire destroyed a home (above) that the protesters used as a base. Anatolian migrants in this part of the city build *gecekondus,* houses "put up overnight." Such hasty construction poses danger for residents in this earthquake-prone city.

# its voluptuous beauty, its sorrow.

the middle-class neighborhood of Göksu Anadoluhisarı on Istanbul's Asian side. "She thinks an earthquake might knock this building over while she is gone," Şakir tells me.

Emine takes me to her living room and pulls two gold bracelets from their hiding place.

"They were wedding gifts from relatives," says Şakir. "Like a dowry, they are her social security. She is afraid that if this building collapses, she would never find her bracelets."

Emine nods, holding up the bracelets. "Deprem . . . deprem," she says.

I take a ferry to Büyükada, one of the Princes Islands about 12 miles southeast of the mouth of the Bosporus. The archipelago defines the southernmost limit of metropolitan Istanbul. Büyükada is a resort where for more than a century Istanbulians have visited their vacation homes to escape from urban pressures. Cars aren't allowed on the island, so I climb aboard a horse-drawn buggy.

"Many people have stopped coming here," says the driver, Ercan Tuntel. "It's out of fear."

Tuntel takes me to a vista overlooking the spot where a branch of the North Anatolian Fault approaches Istanbul beneath the gray sea. Seismologists believe that the stress of the 1999 quake has greatly increased the likelihood that this branch will rupture in the next ten to thirty years.

"We are expecting an earthquake of magnitude 7 or higher," Okan Tüysüz, a geologist at Istanbul Technical University, tells me when I return to the mainland. "The problem is not only the magnitude of the earthquake, but also with the buildings here." More than 400,000


Culture Clash A [illegible] a [illegible] of [illegible]

Promoting liberalism—and flourishing protests—Turkey bans women's veils in public offices

people a year have been moving to Istanbul in the past few decades. Most of the city's buildings were constructed within the past 30 years, and about 70 percent of them were built illegally or improperly. Substandard construction in Istanbul, says Tüysüz, could contribute to the death of 100,000 people.

The section of Istanbul most severely damaged by seismic waves from the 1999 quake was Avcılar, a pleasant, middle-class seaside district with some 200,000 residents on the city's western edge, where the soil structure is particularly weak. The tremors collapsed 27 buildings and killed almost a thousand people.

"I never screamed so loud in my life," recalls Semra Şenol, an architect, as she drives me through the area hit hardest. There are 13,000 buildings in Avcılar. Ninety percent of them were built before 1997, the year construction standards were raised. "All of those pre-1997 buildings are now at risk," says Şenol.

Şenol doesn't feel safe in her house and lives in a trailer set up as emergency housing in 1999. She also stays there because she's angry with her husband and doesn't want to live with him. Psychologists working in Avcılar have seen a surge in such family discord as well as in anxiety, sleep disorders, and alcoholism. Much of it may stem from unresolved trauma.

"Nobody is the same," says Nazım Serin, a psychologist with a nonprofit social services group called Amindos. Social workers there see about 25 people a day who are still trying to cope with the havoc wrought by the quake.

"Events like this change people's core beliefs, their basic assumptions," says Serin. "They lose confidence. Some close down. But we can't let people live in fear for years. They need to learn how to live with the threat of danger."

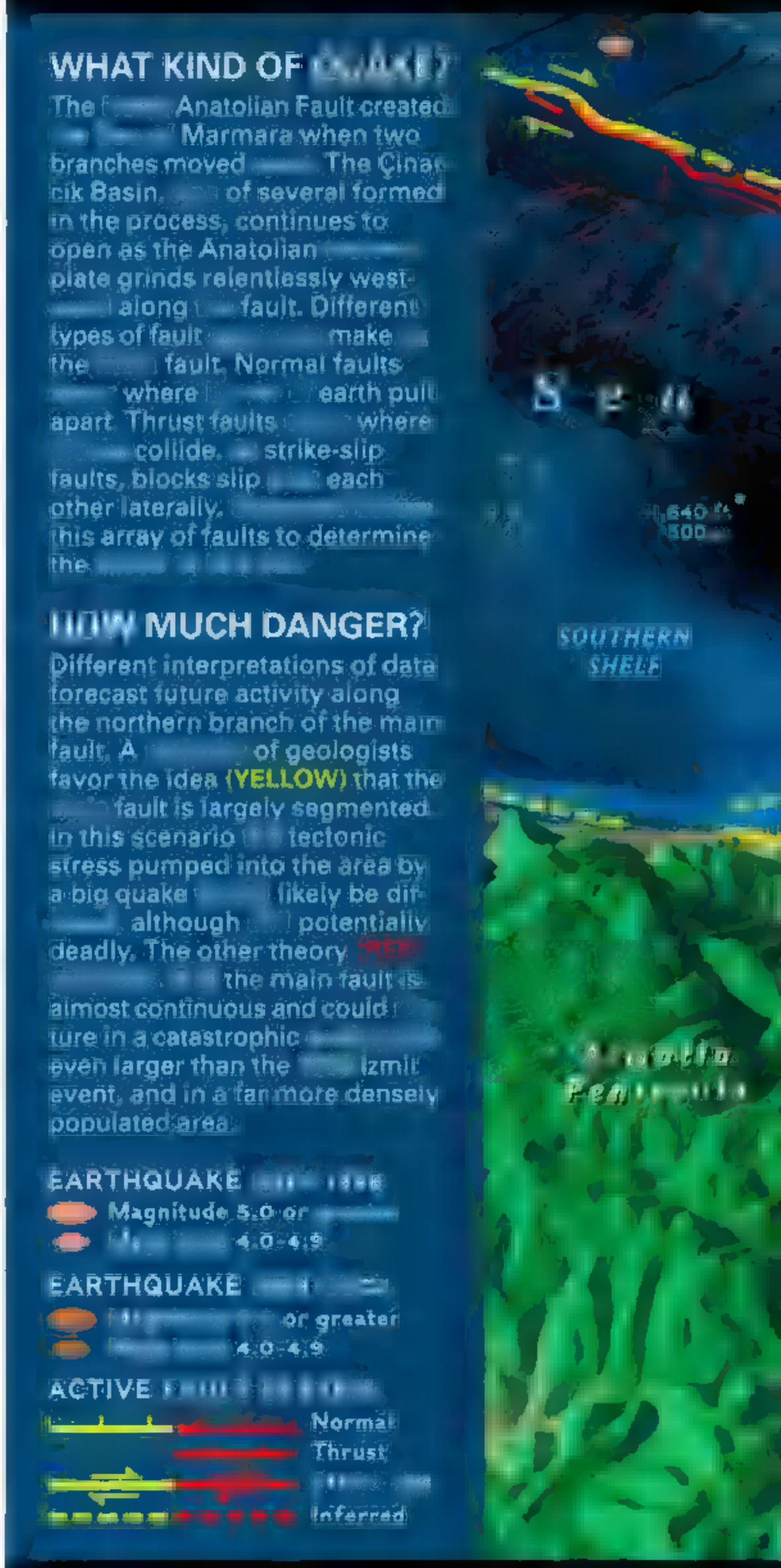
They must also cope with the trauma produced by Turkey's deep economic crisis—one that shows few signs of abating. "Yesterday I shut my shop without making a single lira," says Salih Karagüllü, a middle-aged tailor in the historic district of Fener. "Small businessmen like me are done. People have begun leaving Istanbul. I am too. I am going back to Sinop.

BATHYMETRY ACQUIRED DURING MARMARA CRUISE ABOARD IFREMER'S R.V. *SUROIT* IN 2000, WITH FUNDING FROM IFREMER OF THE EUROPEAN COMMUNITY WITH BILATERAL COOPERATION BY TURKEY, INSU CNRS, FRANCE. MAIN 1 (YELLOW – PULL B MEYER, R. NAVARRO, G A. BARKA, SLIP PARTITIONING IN THE SEA OF MARMARA PULL-APART. R CLUE PROPAGATION THE NORTH ANATOLIAN FAULT?," *TERRA NOVA*, VOL. 14. R (RED—CONTINUOUS) R PICHON, A.M.C. E. DEMIRBAG, C. RANGIN, İ. IMREN, R. ARMIJO, M. GORUR, N. CAGATAY, B. MERCIER DE LEPINAY, R. R TOK, "THE ACTIVE FAULT," *EARTH PLANETARY LETTERS*, VOL. 192, 2001. EARTHQUAKES THOMAS PARSONS, U.S. SURVEY CONSULTANT: MARIE HELENE LAMONT DOHERTY EARTH IMAGE RENDERING ROBERT STACEY, INTERNATIONAL INC. NATIONAL GEOGRAPHIC MAPS.



# What Lies Beneath?

Under the Sea of Marmara tectonic plates move along one of the world's most active geologic boundaries—the North Anatolian Fault. About a dozen significant earthq kes ( magnitude or h ve occurred in this hotbed of activity (right) since 1900. The catastrophic 1999 İzmit earthquake added stress



to a [illegible] of the fault that may [illegible] for hundreds of [illegible] is [illegible] overdue for a major earthquake. Geologists disagree about the nature of this critical [illegible]. Underwater mapping reveals a network of fault segments along the main fault. Are they connected, indicating that the entire fault could break in one enormous jolt? Or is there enough fragmentation to cause smaller, less disastrous ruptures? While [illegible] the geological [illegible] continues to tick.


**A Leg Up** **Affluence affords time for exercise in Ataşehir, ■ neighborhood attractive to upwardly mobile residents fleeing the increasingly crowded inner city. A quarter million people come to Istanbul each year searching for work—or safety. The Ciriks (right) fled southeastern Turkey, where a 16-year ■■■ between Kurdish rebels and the government caught many in the cross fire. But this Kurdish family yearns for home. "We miss our fields, sheep, cows . . . we miss everything."**

# Substandard construction could

In Sinop you can have a small garden and grow fresh food to eat. You can go fishing in a boat and sell your fish. I will never return to Istanbul. Would you leave paradise to come back to hell?"

Despite those leaving, Istanbul's population has soared from about one million to more than nine million in the past half century, as multitudes have flooded the city in search of jobs in Turkey's growing industrial sector. Many live on the ever expanding outskirts of the city.

Küçük Armutlu is perhaps the best known of Istanbul's *gecekondu* communities built by rural migrants who find some open land and throw up shacks, literally overnight. Many migrants from the same village have settled together here, re-creating their rural culture and improving their houses—adding wood floors, tile roofs, and plumbing. Built on a gradual slope, the place has the dirt roads, low houses, and open space of an Anatolian village even though it overlooks an army of new high-rise office buildings.

"Yes, this is Istanbul," says Altın Izzet, sitting with friends outside her home, "even if we don't have as good a life as the ones who live down there."

"But we have fresh air," says an old woman named Kınalı.

As we sip tea, I ask them about their dreams.

"I'd like a rich husband," says one woman.

"I wish I had a nice house," says another. "But I would really like to have my own job. And a car. That's all I want. It hurts me that I can't afford to send my children to school to get an education. They have to work instead."

## contribute to the death of 100,000 people.

Mustafa Çelik also has dreams. I meet him one Saturday night on a crowded, noisy street near Taksim Square in the heart of the city. The wiry, 25-year-old Kurd motions to me from the doorway of a basement barbershop, and a few minutes later I am having the most meticulous haircut of my life. Çelik clips and shaves. With the quick swipe of a flaming cotton swab (and an accompanying flash of burning pain) he singes off the hair inside both my ears. Meanwhile he tells me his story.

A third-generation barber, Çelik came here from the town of Doğubayazıt near the slopes of Mount Ararat a few years ago to earn money so he could marry a girl back home. Her parents say he must earn a dowry of $1,200 plus about $4,000 to pay for the wedding. Çelik makes about $250 a month, so his goal is long-term. He works seven days a week and lives in a one-room tenement apartment. The bathroom is filthy, he says, and so to bathe he takes a ferry twice a week across the Bosporus to friends of relatives.

"All is loneliness here in Istanbul," he says. "I have no time to make friends. Sometimes I call my girl back home, but it makes her cry. So I don't do it often."

THE RUSH OF IMMIGRANTS to Istanbul has put stress on a religious rift that has long divided the city from eastern parts of the country. In recent years increasing numbers of those moving to modern, secular Istanbul from rural Turkey are conservative Muslims.

I meet a young tailor named Yusuf Yıldırım,


# "In Istanbul . . . if you are

whose shop is on a side street in a neighborhood called Çarşamba. He wears a beard and the loose, beltless pants preferred for reasons of modesty by religious men. In the streets outside the shop most of the women wear kara çarşaf to cover their heads, and men of all ages crowd into the mosque at prayer times.

"Çarşamba is the castle of Islam in Istanbul," says Yıldırım. "In all the world this is the best that Islamic life can be practiced. Better than in Iran. Better than in Saudi Arabia."

"We do our preaching quietly, not to provoke," explains Yıldırım. The young tailor, like most Turkish Muslims, embraces the Sunni branch of Islam, which encourages tolerance. Sunnis, Yıldırım tells me, do not seek to impose their faith on others. "Whatever happens, Islam will conquer in the end. In other Muslim countries people are too extreme. They accept only their way," says Yıldırım.

Still, many secular Istanbulians distrust religious conservatives like Yıldırım. Since the founding of the republic in 1923, Turkey has upheld laws strictly separating religion and state. It is illegal, for instance, for women to wear head scarves in public offices or schools, which enrages people like Yıldırım.

"We express our religious beliefs through our clothes," says a young woman named Betül. "The people on top in the government think a meter of head scarf is too long, but they forget they will be wrapped in seven meters of scarf when they die."

"You cannot fight against God," Yıldırım says. "That is why we have earthquakes, and


**Seeking Escape** Two passions, strong tea and backgammon, provide a lunchtime respite. Soccer is another passion in Turkey, which finished a surprising third place in this year's World Cup. As fans at ■ match heave bottled water on the rival team, police stand by to shield players. But the law isn't always a welcome sight in Istanbul, where police brutality is well documented. Such abuses ■■ decreasing ■■ Turkey attempts to polish its image in ■ long-shot bid to join the European Union.

**different,** you will be crushed."

that is why we are having an economic crisis."

The religious tension runs high in many parts of Istanbul, but it does not tend toward violence. The situation in Turkish prisons is a different matter. In December 2000, thousands of armed soldiers broke up nonviolent protests inside 20 Turkish prisons, reportedly torturing and raping inmates.

"We raise our voices and we are put in jail," says a woman named Tokat from Küçük Armutlu, where many residents have been incarcerated for participating in illegal demonstrations for prisoners' rights. The Turkish government denies widespread charges of inhumane treatment or torture in prisons and by police on the streets. But Turkey's alleged abuse of human rights threatens the country's attempts to join the European Union, and it is not hard to find people in Istanbul who say they have suffered police brutality.

Prostitutes, gays, and transsexuals have the worst time with police brutality. But sometimes the victims fight back. One is Demet Demir, a celebrated Istanbulian transsexual who tried to take legal action against the police after repeated beatings.

We meet in a Taksim coffeehouse. Slender, dressed in jeans and a pink tank top, Demir gives few hints, other than a Dietrich-husky voice, that she was born male. Lighting a cigarette, she says: "In Istanbul it doesn't matter whether you are silent or outspoken. If you are different, you will be crushed. But I have a militant soul."

Demir was imprisoned in the early 1980s for protesting Turkey's anti-free-speech laws. In

Protest flags off for these activists: Duo in

## Looking Toward Spring

**Snow softens a view of the city. Jolted by 37 major quakes since Constantine held the throne in the fourth century, will Istanbul fall to the next? If past is prologue, this ancient village turned metropolis will reinvent itself yet again.**

1991, after she began dressing as a woman, she was beaten by a police officer in the side streets off Taksim Square. She complained to the press but was promptly detained and arrested as a prostitute, imprisoned, and beaten again. She recalls that the policeman who beat her asked her what color hose she wanted to be struck with. After her release she brought charges against him, but he continued to harass her until he was transferred.

Demir has since won international human rights awards and support from Amnesty International. But she seems tired. "The best times of my life have passed in prisons and detention houses," she says. "I am 40. I don't feel safe in the streets in the evening. I could be killed by the police, and they will say it was a customer who did it."

She looks up, takes another drag of her cigarette. "I just want to fall in love," she says.

Demir may not get her wish, but a select few of Istanbul's elite can have virtually anything they want. Before I leave, I'm introduced to Ender Mermerci, an ebullient and sophisticated woman of no small means. She invites me to visit her *yalı*, one of the historic wooden mansions that dot the shores of the Bosporus. Istanbul's poor live mostly beyond the vistas along the upper Bosporus; homes of the extravagantly rich line sections of both shores, and the yalıs speak of a time when the Ottoman Empire defined good taste for much of the world.

Sitting on Mermerci's veranda in Vaniköy on Istanbul's Asian shore, we eat elegant hors d'oeuvres prepared by her cook. "This yalı is 300 years old," she says. "It was built by a pasha in the early 1700s. We bought it 16 years ago. We didn't touch the wood except to varnish it."

We gaze across the Bosporus at the lights twinkling in Bebek Bay, where dozens of yachts lie at anchor. "Crossing by water is so much easier than dealing with the traffic," says Mermerci, who is considering buying a new boat.

Before we leave for dinner, Mermerci shows me some art collected by her and her late husband, a Stanford-educated industrialist. "We have a Tintoretto, a small Rembrandt, and two Titians," she says as we tour the treasures in the house—paintings, silver, porcelains. "Too many things," she sighs. "They require much care. I am their slave."

Her chauffeur drops us at a fashionable new restaurant where we dine with about 20 friends. Several hours later as we depart, a paparazzo follows us to the car.

"I hate those people," says Mermerci, slamming the door. "Just wait and see. By tomorrow morning you will be in the papers as my new boyfriend."

## "Çile is a trial that comes from God."

I NEVER SAW THOSE PHOTOS; I had to leave Istanbul on an early flight. But the city's melancholy remains with me. Recently I called my friend Şakir Biçer to ask how he and his mother are doing. He tells me the economy looks a little better and says I should come back for another beer at the Neo Bar.

I remember the young man at the bar who explained "Çile Bülbülüm"— and many others who, in my search for a nightingale, translated the lyrics of that song for me. One of them was a photographer named Attila Durak. "It is not a pessimistic song," he had insisted. "The whole Eastern world understands what it is saying. Çile is a trial that comes from God. It is a cycle we have to go through. Whatever bad things happen will eventually become good things. Spring will come after winter."

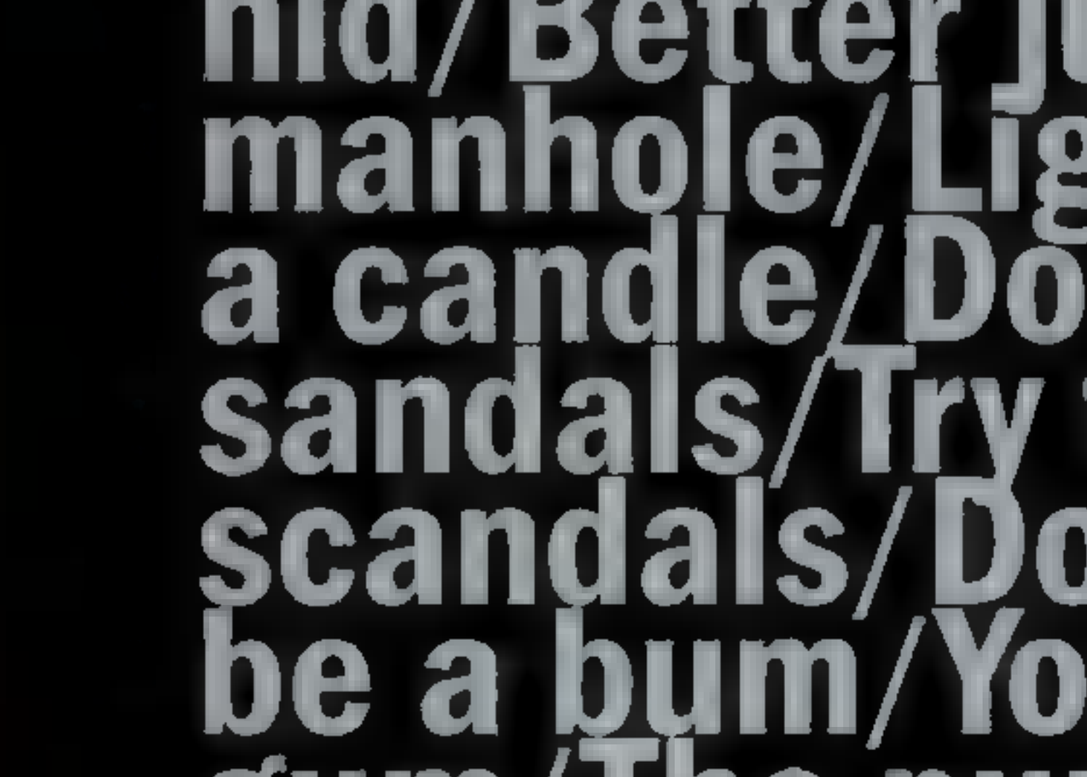
If that bülbül is correct, Istanbul's cruel winter of sorrow must soon end. I can only hope he's right. □

**MORE ON OUR WEBSITE**

Check out Web-exclusive images, field notes, and listing of websites and resources at **nationalgeographic.com/ngm/0210**.

**Ah get born, keep warm/Short pants, romance, learn to dance/Get dressed, get blessed/Try to be a success/Please her, please him, buy gifts/Don't steal, don't lift/Twenty years of schoolin'/And they put you on the day shift/Look out kid/They keep it all hid/Better jump down a manhole/Light yourself a candle/Don't wear sandals/Try to avoid the scandals/Don't wanna be a bum/You better chew gum/The pump don't work/Cause the vandals took the handles.**

—Bob Dylan, "Subterranean Homesick Blues"

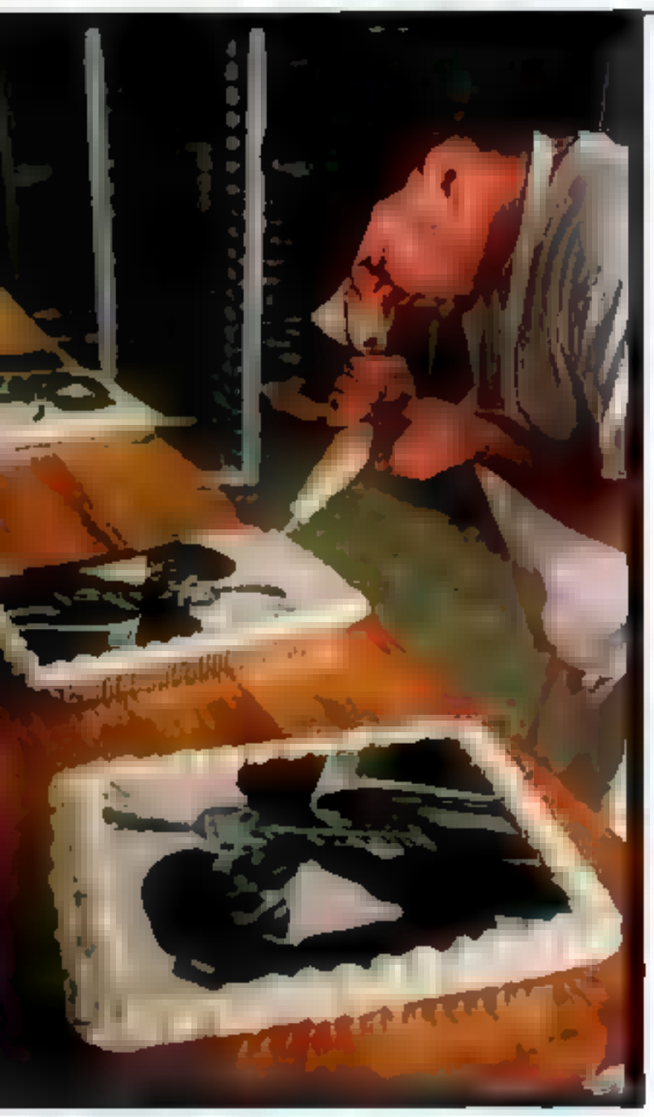



Bob Dylan's [illegible] lyrics and style [illegible] have [illegible] a

# 55746

BY [illegible] ELDER  PHOTOGRAPHS BY CATHERINE KARNOW

generation. But 11-year-old Taylor French [illegible] lives in the musician's childhood [illegible].




55746

**POPULATION:** 18,000

**LARGEST EMPLOYER:** Hibbing Taconite Company

**NAMES OF BOB DYLAN'S HIBBING BANDS:** The Shadow Blasters, The Golden Chords, Elston Gunn and the Rock Boppers

**DYLAN'S HIGH SCHOOL ACTIVITIES:** Latin Club, Social Studies Club

**DYLAN'S LAST PUBLIC APPEARANCE IN HIBBING:** 1969, at his tenth high school reunion

It's sixties night at Zimmy's, the Bob Dylan theme bar and restaurant in the singer's hometown of Hibbing, but hardly anyone is in costume. Oh, sure, a few of the locals have tried to get in the spirit, especially since best costume wins tickets to see Dylan perform in Minneapolis, about 200 miles south of here. Donna French, who now lives in the house little Bobby Zimmerman grew up in, before he left town and changed his name in 1959, is wearing a beret and enough mascara to paint the daytime black. But for the most part it's the staff that's dressed in miniskirts and paisley shirts, and most of them are too young to care about Dylan or the sixties.

Adorned with photos of Dylan in his various manifestations—working-class hero, mod Hamlet, Gypsy mechanic—Zimmy's is as close to a Bob Dylan shrine as you'll find in this town. It has the windows from Bob's old house and a bar menu inspired by the singer's oeuvre, including the Reuben "Hurricane Carter" sandwich and the "Simple Twist of Steak."

Ask anyone in Hibbing and they'll tell you that the town has plenty of history without Bob Dylan. Incorporated in 1893, it became the largest of the many mining towns on the iron-ore-rich Mesabi Range—the "richest village in the world," it was called. But by the late 1950s, when a young Dylan could be seen walking the streets with a guitar slung over his shoulder, much of the high-grade iron ore was depleted. The Hull-Rust-Mahoning Mine, the site of what was the world's biggest open-pit iron ore mine, is a local attraction for tourists, a sort of Grand Canyon of strip mining. "You've seen that great ugly hole in the ground,

**Dylan's image was icing on the cake at Hibbing's float over Gala honoring the star's birthday in May.**

**Fans often cruise the town's little-changed main drag (below) [illegible] eras—and cash—in hand.**

HOUSEHOLD CLEANING TIP #1

# Use Common Scents.


Simple Green® is safer, saves you money, and it works! What could be easier to understand? The original non-toxic, biodegradable, concentrated formula that you have come to know and trust for over 25 years, is now available in a new, fresh lemon scent. Simple Green. It just makes good sense.


**"I never was a kid who could go home. I never had a home which I could just take a bus to."**

**—Bob Dylan**

where that open-pit mine was," Dylan told biographer Robert Shelton. "They actually think, up there, that it is beautiful."

"Most of the people here have never gone to see that big hole in the ground," counters Tom Tintor, a Hibbing native and high school teacher, with some exaggeration. Tintor, along with his friend Ed Beckers, a retired teacher, hosts a local cable access program they refer to as "Wayne's World Hibbing." On-air topics tend to hew close to the traditional concerns of the town: basketball, gossip, hockey—and the mines, which seem to be constantly shutting down.

"Both Ed and I have taught kids who went straight out of high school to the mines," says Tintor, though that has changed. While generations of Hibbingites—the descendants of Scandinavian, Italian, and eastern European immigrants—followed their fathers to the mines, rounds of recent layoffs and closings have made Hibbing a place of limited opportunity. Like Dylan before them, the first thing kids graduating from Hibbing High today want to see is Hibbing in the rearview mirror.

Chantelle French, Donna's daughter, is one of those teenagers. A senior at Hibbing High, she can't wait to graduate so she can study cosmetology in nearby St. Cloud. Living in Bob Dylan's old house, a modest two-story blue stucco building, doesn't mean much to her.

Chantelle's father, Gregg, a sales rep for Frito-Lay, grew up in the neighborhood. Gregg acknowledges that until recently the town has done little to honor Dylan but offers some perspective. "The sign outside of town says 'Home of Rudy Perpich,'" he says, referring to the late governor of Minnesota, "and that's a good thing too." Indeed, Dylan comes fourth in a city booklet list of "famous Hibbing natives," below Perpich, former Boston Celtics star Kevin McHale, and Jeno Paulucci, founder of Chun King Chinese food and Jeno's Pizza.

Despite Hibbing's aging population—the 2000 census clocks the median age at 41—Hibbing High is still the pride of the town. Built in 1922 for an estimated 3.8

**The big wheels of mining trucks keep rolling in Hibbing, [redacted] Greyhound stopped serving the town years before Geno Nicolelli, Sr. (above), opened a museum [redacted] to the bus line that began here.**

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million dollars, the elaborate, castlelike structure would cost at least 75 million dollars to build today. The Oliver Mining Company, then the town's biggest employer, offered the state-of-the-art school as a lure to townspeople when the company wanted to get at the iron ore underneath the town's original location, two miles north of today's Hibbing. More than 40 years since the last house was jacked up and rolled away, Hibbing is still known as a "town on the move."

Standing on the Broadway-size stage in Hibbing High's plush auditorium, Bob Kearney, the school's maintenance supervisor, recalls Dylan's performance at a talent festival there in 1956. "I think the kids were ready for Dylan, but the teachers and the administrators weren't," he says. Dylan had combed his hair in a Little Richard pompadour, and he shouted his way through a selection that included "Jenny, Jenny, Jenny" and "Rock and Roll Is Here to Stay." Legend has it the principal, his first critic, pulled the plug on Dylan's microphone.

**The first thing they want to see is Hibbing in the rearview mirror.**

**"Restless farewell": Dylan's lyrics hold true in Hibbing, where 80 percent of high school students go on to college. Most, like Dylan, leave town.**

Hibbing's other architectural wonder is the Greyhound Museum, commemorating the town's status as the birthplace of the bus line. Eugene "Geno" Nicolelli, Sr., collected Greyhound memorabilia in his basement until his wife put a stop to it in the 1970s. Two decades later he had raised enough money to open the terminal-shaped museum in 1999—eight years after Greyhound stopped coming here.

The timing struck some locals as amusing, in a bittersweet sort of way. "I was the butt of a lot of jokes," says the 76-year-old Nicolelli, who didn't let that slow him down. But he admits he won't be around forever. "I've got a good board of directors," he says, "but they're all in their 70s. We need a young person—someone in their 40s or 50s."

Dylan turned 60 last year—too old to take the wheel at the Greyhound Museum. Probably just as well. His feelings about his hometown have always been, at best, ambivalent. Everything he knew about small-town America, good and bad, he learned here, and he may finally have been no more accepting of this town and its populace than they were of him. Besides, there's no looking back. "I never was a kid who could go home," he once said. "I never had a home which I could just take a bus to." □

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# Final Edit

HIBBING, MINNESOTA

## Forever Young

The Golden Eagles, ages 73 to 92, of Hibbing's Golden Crest Healthcare Center scrap for a foam puck while practicing for their next game of cane hockey—the seated version of Minnesota's favorite sport. The day photographer Catherine Karnow visited, the team was scheduled to play the Mighty Ducks, opponents from a nursing home in nearby Buhl. The game was called on account of snow.

"I loved the picture," says illustrations editor Susan Welchman, "but in choosing pictures for this story, we were looking for images that had a stronger connection to Bob Dylan's life in Hibbing, subjects that would have inspired his music." Like many Minnesotans, Dylan played hockey in his youth, but the subject isn't in his songbook.

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Cut it or keep it? Find out what tipped the balance for this photo at ***nationalgeographic.com/ngm/0210.***


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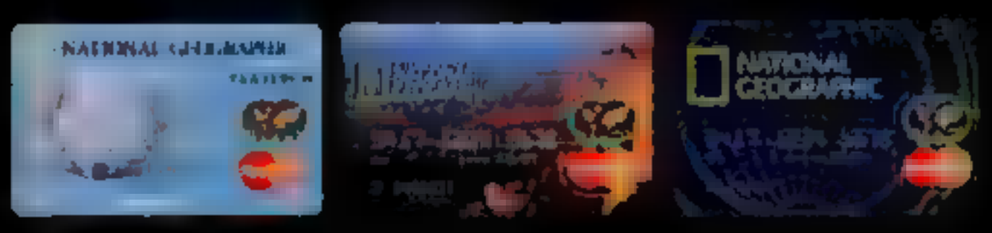

NATIONAL GEOGRAPHIC™

SAHARA EGYPT

# Ancient Egypt 101

*Before it became a desert, it was home to advanced people*

By A. R. Ann Williams

Ann Williams majored in [illegible] way toward earning a master's degree in [illegible] getting jobs managing [illegible] in the Sudan's Dongola Province.

Ann [illegible] and ran off to Africa for four and a half years.

learned [illegible] from scratch, got a job as a translator [illegible] trans- mission [illegible] and [illegible] writer. Back [illegible] Ann became [illegible] the Museum [illegible] Latin American and the Caribbean, [illegible]

of the French [illegible] Mission at [illegible] monuments [illegible] this mortuary [illegible]

[illegible] I could [illegible] to learn [illegible] to Archaeology [illegible] stuff [illegible] get to do.

2002

# GNMENT

COVERING THE WORLD


HIBBING, MINNESOTA

## Queen of Hearts

STEPHEN ZEITLER

It's the daily routine at the Hibbing Taconite Mine. "This is the trailer where the maintenance guys, called the Bull Gang, have lunch," says photographer **Catherine Karnow.** "They're the toughest of all the people who work in the mines. At the alpha male table [above] are the toughest of the toughest. Every day they come in for lunch and play hearts."

So Catherine—the outsider, from California no less—joined them. "I used to play hearts in college, so I didn't feel intimidated," she says. "To me they were just hard workers taking a lunch break. We got pretty chummy. The mine's PR guy told me that the fact I was a woman helped make these guys comfortable—a male outsider would've been a threat."

How did Catherine do, playing at the alpha table? Well, she reports, "I lost miserably."

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### WORLDWIDE

Author **Rick Gore** covered the last major Turkish earthquake for the July 2000 issue, then returned to Turkey last summer to begin researching this month's article on Istanbul. He was in the Turkish city on September 11, 2001. "The rubble, the sorrow, and all the dead in New York City were so evocative of the trauma I witnessed in Turkey after the 1999 earthquake," Rick says. Back then he had learned to use ■ Turkish expression of sympathy, *Geçmiş olsun*—"May your suffering soon be over." Last September in Istanbul, Rick, who retired as the magazine's science editor in December after 28 years on staff, met with street kids trying to break their addiction to sniffing glue and paint thinner. "One boy came up to me, pointed to a TV set showing the ruins of New York, and very sweetly said to me, 'Geçmiş olsun.' The world had come full circle."

As a boy, author **Tracy Dahlby** (right, seated in a Ferris wheel gondola above Tokyo Bay) watched Godzilla movies on ■ black-and-white TV set and was duly terrified. Imagine his surprise when he met the monster and learned Godzilla was a good deal shorter than he was. Godzilla—actually, actor Kenpachiro Satsuma—"showed up ■ ■ samurai outfit with ■ cell phone dangling from his neck. Later he put on the Godzilla suit. It's ■ hot, heavy suit, ■■ he didn't spend a lot of time in it."

Photographer **Michael Yamashita**'s father ■■■ born in the U.S., grew up in Japan, then moved back to the land of his birth. After Mike graduated from college, he spent four years in

MICHAEL YAMASHITA

Japan "doing my roots thing. I worked for a marble company, studied Japanese, and learned to be ■ photographer," he says. He's photographed Japanese subjects for the magazine for 20 years, including an article on his fellow Japanese Americans (April 1986).

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# Flashback

ALEX AARONSOHN

ISTANBUL

## Her Little Secret

Perched on a tasseled divan, swathed in silks, her face demurely veiled, this elegant Constantinople lady just might not be a lady.

Western curiosity about the Ottoman imperial harem created a demand for exotic postcards like this in the early 1900s (the Society's archives received this photo in 1911). But because Islamic tradition discouraged Turkey's Muslim women from being seen by men who weren't their husbands, photographers sometimes asked men to pose dressed as women.

This photograph has never before been published in the magazine.

**MORE ON OUR WEBSITE**

You can send this month's Flashback as an electronic greeting card and access the Flashback photo archives at **nationalgeographic.com/ngm/flashback/0210.**

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